United States Department of the Interior

OFFICE OF SURFACE MINING
Reclamation and Enforcement
1999 Broadway, Suite 3320
Denver, Colorado 80202-5733

UT-0079

March 10, 1999

I concur with the findings of Utah Division of Oil, Gas and Mining (DOGM) made in accordance with Utah regulations at R645-032-214, and hereby approve the Experimental Practice proposed by the West Ridge Resource, Inc. for Topsoil Protection at the West Ridge Mine, Carbon County, Utah.

This approval is based on the attached: (1) finding of no significant impact (FONSI) prepared by the Western Regional Coordinating Center (WRCC), (2) the Environmental Assessment No. UT-066-98-41, dated May 1998 prepared by the Bureau of Land Management, Price Field Office for Carbon County for Development of the C Canyon Road, etc., (3) review by WRCC of the Experimental Practice proposal and DOGM's findings, (4) DOGM's technical analysis of the Experimental Practice proposal and resulting findings, and (5) recommendation of Assistant Director, Program Support.

Tab 2 Tab 3 Tab 5 Tab 6 Tab 4

Approved ..... Date 3/18/99

Brent Wahlquist, Regional Director
Western Regional Coordinating Center

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United States Department of the Interior

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OFFICE OF SURFACE MINING
Reclamation and Enforcement
1999 Broadway, Suite 3320
Denver, Colorado 80202-5733

PRO/007/041 #3
Copy Bob

March 18, 1999

UT-0079

Ms Pam Grubaugh-Littig
Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, UT 84114-5801

Dear Ms Grubaugh-Littig:

The Regional Director has approved the Experimental Practice proposed by the West Ridge Resources , Inc. for topsoil protection at the West Ridge Mine. A copy of approval, along with supporting documents is enclosed for your use and records.

If you have any questions regarding this approval, please let me know.

Sincerely yours,

Ranvir Singh

Ranvir Singh, P.E.
Program Support Division

copy with enclosure to:
Scott Boyce, O.M. HQ
James Fulton, Denver Field Division

File in:
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Date 03/89 For additional information

RECEIVED
MAR 24 1999
DIV. OF OIL, GAS & MINING

U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT

FINDING OF NO SIGNIFICANT IMPACT
for
EXPERIMENTAL PRACTICE APPROVAL

West Ridge Mine
Carbon County, Utah

A. Introduction

West Ridge Resources, Inc.(WRRI) is proposing a new mine site facility, the West Ridge Mine, in C Canyon approximately 6 mines north of East Carbon City, Utah. In conjunction with development of this new facility, WRRI is proposing an experimental practice on approximately 4.75 acres of the 29-acre proposed disturbed area to protect the topsoil resources (Strych and Midfork soils) in place with a geotextile fabric. Necessary depths of fill material would be placed over the fabric, preserving the existing stream channel and bank morphology and original ground surface configuration. The proposed practice was submitted as an integral part of the permit application package (PAP) for the new permit for the West Ridge Mine to the Utah Division of Oil, Gas and Mining (DOGM) under the Utah State program (30 CFR Part 944).

Pursuant to Federal regulation at 30 CFR 740.4(b)(2), the Director of the Office of Surface Mining Reclamation and Enforcement (OSM) must approve experimental practices on Federal lands before Utah DOGM can approve the PAP and issue a permit to conduct coal mining at the West Ridge mine. The Director of OSM has delegated this authority to the Regional Director, Western Regional Coordinating Center.

B. Statement of Environmental Significance of the Proposed Action

The undersigned person has determined that the above-named proposed action would not have a significant impact on the quality of the human environment under section 102(2)(C) of the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4332(2)(C), and therefore, an Environmental Impact Statement is not required.

C. Reasons

This finding of no significant impact is based on the attached: (1) technical analysis of the experimental practice proposal by and findings of DOGM, (2) technical analysis of the experimental practice proposal by WRCC, and (3) BLM-prepared Environmental Assessment (i.e, EA No. UT-066-98-41: Carbon County Development of the C Canyon Road; West Ridge

Resources, Incorporated Development and Surface Operation of the West Ridge Mine; Development of the C Canyon 69kV Power Line; Development of the C Canyon Telephone Line; Development of the C Canyon Water Line; and, East Carbon City Development of the C Canyon Water Line in Carbon County, Utah, May 1998). These documents have been independently evaluated by OSM and determined to assess the environmental impacts of the proposed action adequately and accurately and to provide sufficient evidence and analysis for this finding of no significant impact. In addition, OSM takes full responsibility for the accuracy, scope, and content of the attached environmental assessment.

Chief, Program Support Division
Western Regional Coordinating Center

3/16/99
Date

Attachments

U.S. Department of the Interior

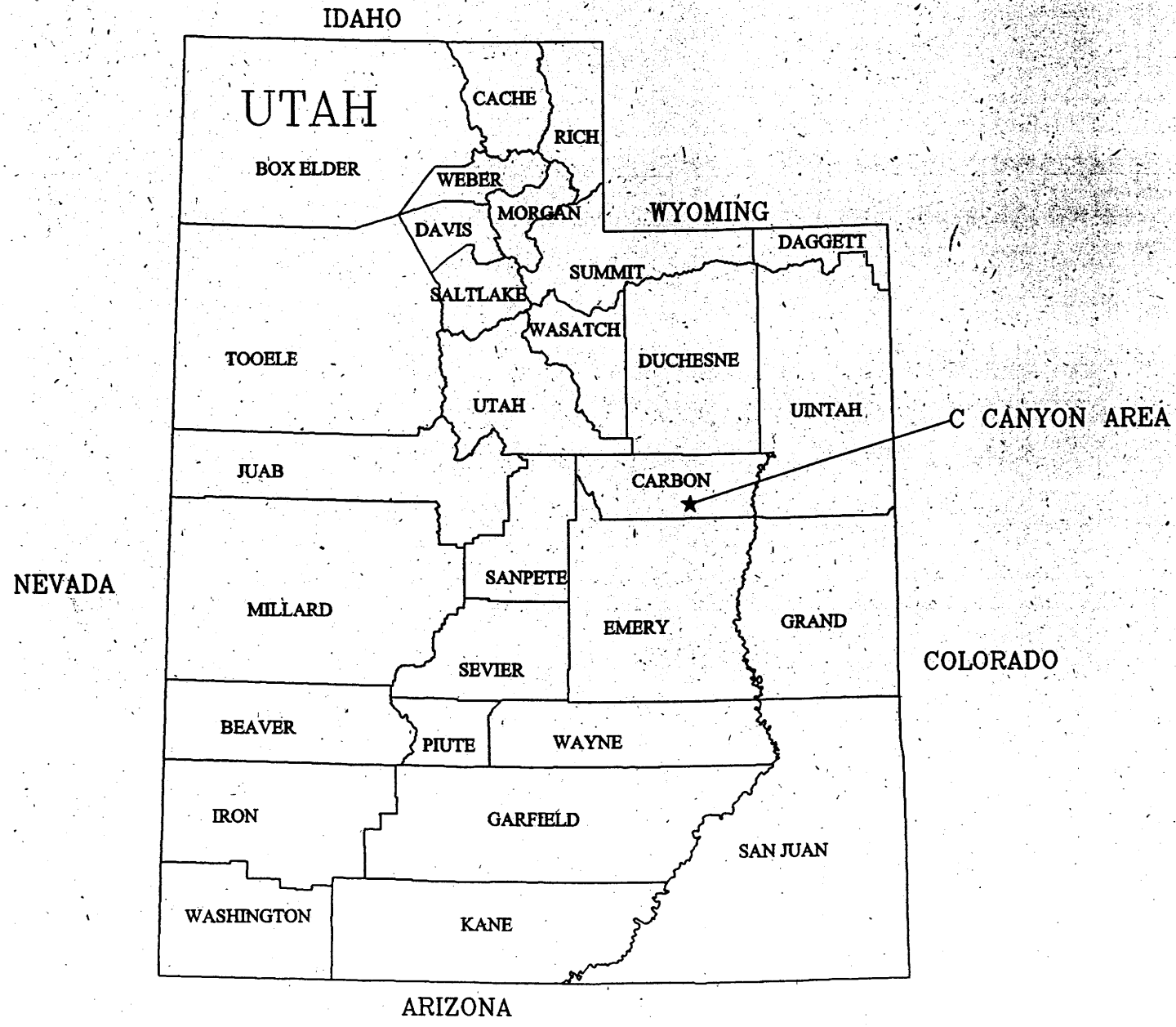
Bureau of Land Management
Moab District Office

Price Field Office

UTAH

May 1998

Environmental Assessment for
Carbon County Development of the C Canyon Road
and
WEST RIDGE Resources, Incorporated
Development and Surface Operation of the West Ridge Mine
Development of the C Canyon 69 kV Powerline
Development of the C Canyon Telephone Line
Development of the C Canyon Water Line
and
East Carbon City Development of the C Canyon Water Line



Environmental Assessment No. UT-066-98-41

TABLE II-3

OWNERSHIP SUMMARY OF LAND AFFECTED BY PROPOSED WATER LINE

Ownership	Miles	Acres - 25/10' ROW (Construction)	Acres - 10' ROW (Operational)
BLM	4.83	7.34	5.85
State of Utah	1.10	1.98	1.33
UDOT	0.79	0.96	0.96
Private	1.56	4.73	1.89
TOTAL	8.28 Miles	15.01 Acres	10.03 Acres*

- No Surface Operational Surface Disturbance Anticipated

Construction crews would utilize a track hoe, back hoe, or other trenching equipment to excavate a two foot wide, four foot deep trench. Where new disturbance would occur, topsoil would be stripped to a depth of six inches and sidecast into a berm paralleling the trench for use during reclamation. Subsoil material removed from the trench would be stored separately from the topsoil. Crews would work in tandem during trenching and line assembly. Upon completion of assembly and placement of the line in the trench, crews would cover the line with the excavated subsoil and replace the stored topsoil. The area would then be revegetated with the appropriate seed mix and vegetation plan approved by the BLM and private landowner. No surface access roads would be left in place within the 10 foot operational ROW.

In order to lift the required volume of water to the mine, two 40 horsepower electric pump stations would be located adjacent to the water line and road. Two, 100 foot by 100 foot areas between the operational ROW's of the road and power line would be located in NW ¼ SW ¼ of Section 29 and the SW ¼ SW ¼ of Section 15. Sizing of these pads would allow for the siting of the pump house adjacent to the power line without the creation of an additional ROW for access. Construction crews would clear the immediate location of the 16 foot by 13 foot pump house using crawler tractors or graders. A 100 foot dirt access road within a 10 foot ROW would then be graded laterally from the proposed C Canyon road to each pump house. The pump houses would be constructed of cast-in-place concrete to minimize vandalism and painted with an approved BLM color to minimize visual impact. The pump houses would be heated and cooled to maintain the efficient operation of the pumps throughout the year. An above ground power line, approximately 100 feet in length, would tap the adjacent proposed power line at each pump house location. Pole mounted substations would be constructed within the pump house areas to convert the three phase power of the 69 kV line to single phase for use by the pumps.

Development of the West Ridge Mine - Upon completion of the proposed road, construction would commence on the surface facilities associated with the development of the West Ridge Mine within the lease modification area. The proposed surface disturbance area is shown on PLATE II-O. This plate depicts the maximum potential disturbance around the facilities that would be used for the life of the mine. The proposed maximum disturbance area amounts to approximately 29 acre and would

be composed of the anticipated on-the-ground disturbance (projected at about 25 acres) plus extra undisturbed buffer acreage around the perimeter of the facility. The proposed disturbed area would be the total disturbance needed for the life of the mine and would be reclaimed following the completion of underground mining activities.

Surface structures and facilities for the West Ridge Mine, an underground mine, would be constructed in C Canyon near the fork in the canyon within a proposed 80 acre lease modification area located at T. 14 S., R. 13 E., Section 10, SE ¼ SE ¼ and Section 15, NE ¼ NE ¼ (PLATE II and PLATE II-O). As described, the actual surface disturbance associated with the mine development would not exceed 29 acres. Therefore, approximately 55 acres of the lease modification area would remain undisturbed for the life of the mine. The function of the surface facility area would be to provide for mine access, mine ventilation, coal storage, coal loading, warehousing, offices, and the bathhouse.

WEST RIDGE is currently within the permit review process of a Mine and Reclamation Permit Application (MRP) for their Utah Division of Oil, Gas and Mining (UDOGM). This permit application with the UDOGM requires that all proposed mine and mining activities be described in full detail in relation to legal issues and bonding, as well as engineering and how it relates to soils, biology, land use, geology, and hydrology. In association with the proposed WEST RIDGE engineering actions, mitigation as recommended by the UDOGM in the form of operational stipulations and creation of successful reclamation procedures upon the cessation of mine operations have been incorporated into each resource discussion within the MRP. Therefore, each action as proposed within this EA has taken into consideration the various resources present and UDOGM requirements to minimize impacts to them. Actions as described within this EA have been summarized from the detailed WEST RIDGE MRP analysis.

The mine site surface facilities would be located in C Canyon where the Lower Sunnyside coal seam outcrops to the surface. Because of the narrowness of the canyon in this area, surface facilities would be confined to a narrow strip along the bottom of the canyon. Suitable surface area for the mine site would be created by constructing a series of earthen pads within the canyon bottom. This would be accomplished by hauling in fill material and by leveling out the area in the bottom of the canyon drainage. The average gradient of C Canyon in the mine site area is approximately 6.4 percent. Therefore, the mine pads would be constructed up through the canyon in a stair step manner. Each individual pad level would be dedicated to a specific function as part of the overall mine site operation. Access roads would connect the various pad levels with one another.

The proposed mine site is located in an area where the main canyon branches into two forks. For simplicity, the mine site can be delineated into four distinct areas: the area located within the left fork (left fork); the area located within the right fork (right fork); the area located within the main canyon south of the forks (main canyon); and the area where the main canyon and the two forks converge (confluence). These terms (right fork, left fork, main canyon and confluence) will be used during the remainder of this discussion to refer generally to these respective areas. The mine office, parking lot and a series of sediment ponds would be located within the main canyon. The proposed road which provides access to the mine site would enter the mine yard in this area. The truck loop and truck loadout would be located within the confluence area. The left fork would contain the crusher

building, the coal storage pile and a topsoil storage area. The right fork would contain the employee parking area, bath house, substation, portal area, shop/warehouse material storage area and a topsoil storage area.

As part of the overall mine site development plan, certain major construction tasks must be accomplished in a prescribed manner. Most of these construction tasks are common to many, if not all of the area described above. The following tasks are listed in order in which they would generally be expected to occur within any given area of the mine site. However, in practice many of these construction tasks would be occurring simultaneously, but at different areas, throughout the mine site. This is attributable to the fact that the mine site construction would be done over a long narrow stretch of the canyon bottom. Most construction tasks would begin at the lower, down-canyon end of the mine yard and proceed up canyon. As primary initial tasks are completed at the lower reaches of the site, secondary tasks can begin even though the primary tasks may not yet be completed in the upper reaches of the site. A more detailed construction and reclamation plan, as prepared by WEST RIDGE for their MRP is included as APPENDIX E.

The following discussion assumes that topsoil in certain areas of the C Canyon mine surface facility would be protected in place for the life of the mine. This would be an experimental practice subject to the Office of Surface Mining (OSM) as part of the permitting process. If this experimental practice is not approved, then all topsoil would be salvaged and stockpiled in the conventional manner.

Clearing and Grubbing - One of the earlier phases of construction would involve the removal of all trees and shrubs from the mine site area. Prior to harvesting of large commercially valuable trees, a BLM timber appraisal would be conducted to determine the value of these resources. WEST RIDGE would then reimburse the BLM for the value of these trees. Smaller pinyon and juniper trees would be cleared and transported to an off-site green wood storage area for public fuel harvesting use. Shrubs and all other slash material would be buried in a controlled manner within the pad fill in non-structural areas such as the coal storage pad in the left fork and the material storage area in the right fork. In order to avoid compaction complications, slash would be buried away from the bypass culvert which would be installed in the bottom of the existing drainage.

Installation of the Bypass Culvert - The initial phase of construction would involve installation of the undisturbed drainage culvert (bypass culvert). This culvert would be installed within approximately 1.11 miles of the existing channel and side drainages and designed to carry the natural canyon drainage underneath the mine site. This culvert system allows the natural drainage to "bypass" the disturbed area of the mine site. This separation also would allow the disturbed area drainage to report to sediment control features on the surface, thereby preventing intermingling with the natural undisturbed drainage flowing through the bypass culvert.

Prior to culvert installation the channel bottom would first be prepared. A backhoe would be used to smooth out and grade the channel bottom. Large boulders would be moved aside and irregularities (humps, bumps and depressions within the channel bottom) filled in utilizing native materials. Where needed, a thin layer of bedding material (imported crushed eight inch

borrow) may be laid in the channel bottom to aid in culvert installation. In areas of pronounced grade breaks additional bedding material may be required to provide an adequate vertical alignment for the culvert. In other areas where the existing channel is already smooth and uniform, no bedding material may be required. To the maximum extent possible the alignment of the bypass culvert installation would closely follow the existing stream channel. Culvert angle-joints would be pre-engineered and pre-fabricated to insure that the existing channel alignment can be followed as closely as possible.

Boulders would be removed from the culvert path and relocated up along the flanks of the channel. In this location the boulders would be in convenient proximity to be repositioned back into the stream channel upon final reclamation to replicate the pre-existing pre-mining geomorphology of the channel. Trees and shrubs would be removed from the channel prior to culvert installation. In areas where topsoil resources are located within and along the banks of the existing channel, trees and shrubs would be cut off about six to eight inches above the ground surface. Stumps and roots would be left in place to help stabilize the existing soil and the existing channel configuration.

After the channel has been readied for culvert installation (i.e., graded, bedding material placed, boulders removed and vegetation removed) the culvert would then be installed. The typical pre-culverted channel would be about 10 to12 feet wide across the bottom and would have natural 2:1 sideslopes. Before the culvert is installed in topsoil areas, the channel bottom would first be lined with a geotextile fabric placed across the full width of the channel and extending up the side banks at least five feet on either side of the channel. The purpose of the geotextile would be to provide a separation barrier to protect the channel and the stream bank topsoil, and to preserve it in its natural condition prior to being filled over during subsequent construction of the mine pads. This would help ensure that upon final reclamation the channel morphology could be adequately restored.

After the geotextile has been placed through the prepared channel, the culvert would then be installed on top of it. As explained earlier, the culvert alignment would closely follow the existing channel alignment. However, in a few selected areas the culvert alignment would be shifted slightly to accommodate important surface structures, such as the mine fan and the substation. After the culvert has been laid in place, it would immediately be back filled using the same imported eight-inch fill material that was used for the bedding. Vertical risers would be installed at various locations along the length of the culvert to aid in hydraulic venting and to serve as access for inspection and maintenance. After the culvert has been backfilled and compacted, the area over the top of the culvert could be used as an access way for machinery and material involved in the remainder of the site construction.

Construction of the Sediment Ponds - Once the culvert installation has progressed beyond the location of the sediment ponds, construction of the initial sediment ponds would commence. The sediment pond actually consists of three individual smaller ponds or cells. Each of these cells would be constructed in the bottom of the canyon directly over top of the bypass culvert. The lower pond (Cell C) would be constructed first, after the bypass culvert has been installed through that area. As construction of the culvert continues upstream the

remaining two pond cells would be installed in sequence. In this manner the sedir would be installed as early as possible in the construction schedule. These ponds wou be in place for the entirety of the remaining construction activities and would prov maximum sediment control for the rest of the project.

The three-tiered multi-cell pond arrangement would be well suited to the steep gradient and narrow confines of the canyon. The ponds would be constructed in a cascading arrangement whereby most mine site disturbed area drainage would report initially to the uppermost pond. If the upper pond fills to capacity, excess runoff would report to the middle pond through an open channel spillway located between the ponds. If the second pond fills to capacity, the excess run-off would then report to the third and lowermost pond. The combined capacity of the three-celled pond would be well in excess of the 10 year, 24 hour precipitation event requirements. However, if the total pond capacity was exceeded, the over flow from the third pond would exit through a riser-type culvert primary spillway equipped with an oil skimmer. This riser spillway would lead directly to the main bypass culvert located below the sediment ponds. One advantage of the multi celled pond is that most sediment would tend to collect in the upper pond. This would greatly simplify sediment monitoring and clean out. The three-cell arrangement would also preclude the possibility of short-circuiting and simplify the process of decanting the pond in a manner that meets Utah Nonpoint Discharge Effluent Source (UNPDES) requirements.

All open channel spillways would be constructed to pass the 10 year, 24 hour storm event. Spillways would be lined with concrete or grouted rip rap, and have a bottom width of five feet; a freeboard depth of two feet; and 2:1 sideslopes. The lower pond would also be equipped with an open channel emergency spillway capable of handling a 25 year, 6 hour storm event. Rip rap would be installed at the outlet of all open channel spillways to protect the earthen structures from erosional forces.

Topsoil Removal, Salvage and Stockpiling - Within the mine site there are sideslope areas where topsoil presently exists. In these areas the topsoil resource would be carefully removed and stockpiled before any additional excavation continues. All topsoil salvaging would be completed under the direction of a soil scientist. Based on the soil surveys completed in this area, up to 24 inches of topsoil may exist in these areas which could be salvaged. Topsoil in these areas would be salvaged with backhoes, trackhoes and/or small front end loaders and hauled by dump trucks to the designated topsoil storage areas. If the topsoil depth in these areas averages 18 inches, as much as 6,506 cubic yards of topsoil could be available to be salvaged and stockpiled. All topsoil areas would be bermed and revegetated to ensure their stability.

Two topsoil storage areas are being proposed: one at the upper end of the material storage area in the right fork, the other at the upper end of the coal storage pad in the left fork. The right fork area would be the primary storage area. The left fork storage area would be utilized if needed in the event that the right fork area was filled to capacity and additional storage area was required. The left fork storage area may also be utilized if separate and segregated stockpiles are needed to maintain the integrity and identity of the individual soil

types present at the site for future reclamation.

An alternative 20 acre topsoil borrow area adjacent to the proposed road borrow area in T. 14 S., R. 13 E., Section 16, NE ¼ SE ¼ may be used to meet the reclamation standards of the proposed mine surface facility (PLATE II). This area would remain undisturbed for the life of the project and would be utilized only in the event that salvaged and stockpiled topsoil was not adequate for UDOGM reclamation success. Correspondence and permit applications associated with this site to the USITLA are included in APPENDIX B.

Face Up of Coal Seam/Preparation of Portal - As soon as possible after construction begins, the coal seam would be faced up and the portal area excavated. The portals would be located on the southeast side of canyon within the right fork. Prior to facing up the portals, the area would be cleared and grubbed, and topsoil salvaged. The extent of coal seam weathering and/or burn would dictate the extent of the pad site needed to access the solid coal face for the purpose of installing the portals. The pad would be constructed long enough to accommodate at least four portal openings (fan, belt, two intakes), while minimizing the cut face height. Minimizing the extent of the cut face is an important consideration not only in the initial mine development but also and even more so for final reclamation. The portal pad would be constructed and stabilized as necessary to conform to the safety requirements of MSHA. In order to achieve minimum disturbance of the canyon side slope, the portal pad would be cut into the solid rock as steeply as possible while still maintaining the necessary long term structural stability.

Construction of Earthen Pad and Access Roads - According to computer models of the mine site earthwork, approximately 100,000 cubic yards of borrow would have to be imported to achieve the proposed mine yard configuration. This material would be crushed to an eight inch product before being delivered to the site. Fill material, imported to the site from a commercial borrow site, would be chemically and physically similar to the native materials existing at the mine site.

Fill would be placed in 18 to 24 inch lifts and compacted to a minimum 90 percent density for nonstructural areas, and to 95 percent density in structural areas. Nonstructural areas include parking lots, material storage areas and coal storage areas. Structural areas include all areas under buildings, conveyor belts, substation, backfilled areas around culverts and reclaim tunnels, roadways, mine fan and reinforced earth retaining walls. Experience has shown that this material can usually exceed 95 percent compaction using standard wheel rolling methods, although vibratory compaction would be used in critical structural areas. All earthwork would be required to meet a minimum of 4000 pounds per square foot (psf) load-bearing capacity. Construction emphasis and priority would be given to those pad levels that are designed to accommodate key structural elements of the surface facilities. These include the pad levels associated with the coal pile reclaim system, the substation, the elevated conveyor gallery, bath house, and shop/warehouse building.

Although most of the pad levels would be constructed by filling the area with imported borrow, some pad construction would involve cutting into the existing side slopes. Under

normal construction situations sideslope cuts would be minimal, and would not usually extend up-slope more than about 20 feet above the completed pad level. The primary purpose of the sideslope cuts is not to generate fill volumes, but rather to provide uniform yard boundaries for proper alignment of ditches, roads, buildings and other peripheral structures. Cut slopes area would also be necessary to predefine the limits of the pads for the purpose of layout and engineering design. Clear slopes would also be needed to assure long term site maintenance. In order to meet the objective of yard limit definition, the slopes in some areas may actually be constructed by placing fill against the sides slopes rather than cutting into the existing hillside.

Before any slope cuts are made, topsoil would first be salvaged and stockpiled. After the topsoil has been removed and protected as described previously for topsoil stockpiling, the substrate material would be excavated. Cut material would be incorporated into the pad fill along with the imported fill material. Sideslope cuts may be greater in some selected area where pre-engineered design parameters dictate. These areas include roadways, portal highway, conveyor runs and various building sites.

Installation of Drainage Controls - As previously stated, the sediment pond would be constructed as early as possible in order to provide maximum sediment control during the term of the construction project. Once the pad levels are constructed along with the interconnecting roadways, drainage control ditches and culverts would be constructed and culverts installed. Disturbed area ditches and culverts would be designed to handle a 10 year, 24 hour storm event. Where necessary, ditches would be lined with concrete or rip rap to prevent erosion where velocities are expected to exceed five feet per second (fps). Culvert inlets would be designed to provide adequate freeboard for design flows; outlets would be rip rapped where necessary to prevent scouring.

Construction of Coal Handling and Associated Facilities - Construction of the coal handling facilities would be scheduled to allow the mine to get into full production as quickly as possible. The underground mining operation cannot function smoothly until the elevated conveyor gallery and discharge structure are fully operational. On the other hand, the mine conveyor cannot become fully operational until the mine working area is developed far enough underground from the portals to allow the conveyor to be extended into the mine works and become an integral working part of the continuous miner production section. Once the initial mine works have begun, connected up underground with crosscuts, the conveyor can then become operational.

Other integral components of the coal handling facilities necessary for full production include the coal reclaim tunnel, crusher building, truck loadout and interconnecting conveyors. Only after this system is completely operational, can mine development and coal production begin in earnest. Other important structures necessary for full-scale mine surface production include the main substation, the water delivery system, and the mine ventilation fan.

After the critical path coal handling facilities and mine development structures are fully operational and the underground mine development is proceeding on course, full attention

would be focused on completing the ancillary surface facilities. Once the permanent structures are finished, the temporary accommodations used during construction can be removed from the site.

Buildings to be constructed at the mine site include: an administrative office, a shop/warehouse building, and a bathhouse/lamphouse building. The shop/warehouse would be used to repair and store mine equipment and supplies. The yard area around these buildings would be used for additional outside storage and parking. The bathhouse and office buildings would be sized to accommodate a workforce of approximately 130 people.

PLATE II-O is an overview of the mine surface facility. The following facilities would be constructed in conjunction with the mining operation:

- Administration Office - The main office would be a framed building measuring approximately 40 feet wide by 60 feet long. It would handle the administrative functions such as accounting, engineering, payroll, marketing and management. The main office would be located on a dedicated pad at the lower (southernmost) extent of the mine yard. Parking would be made available in the area adjacent to the main office.

- Mine Fan - The mine fan would be located at the return air portal. It would be a 12 foot diameter, direct drive, 1,000 horsepower (hp), axial vane exhausting type fan. The fan housing would include airlock travel doors for machinery and personnel. The exhaust duct work would be equipped with acoustical sound-proofing material to keep noise levels at a minimum.

- Bathhouse/Lamphouse - The bathhouse building would be a pre-fabricated metal structure measuring approximately 40 feet wide by 120 feet long. It would be located in the central part of the mine yard in convenient proximity to the mine portals. An employee parking lot would be located nearby. The bathhouse would be sized to accommodate the anticipated workforce of about 130 employees. Located at one end of the bathhouse building would be the lamphouse and the offices for the mine supervisory personnel.

- Shop/Warehouse - The shop/warehouse building would be a pre-fabricated metal structure measuring approximately 60 feet wide by 160 feet long. It would be located in the northern part of the mine yard conveniently adjacent to the mine portals. A storage area for materials and supplies would be located nearby, as would be the fuel storage, rock dust storage and garbage repository (dumpster) facilities.

- Coal Stockpiling Facilities - Coal would be brought out of the mine and delivered to the surface via a 2,000 ton per hour, 60 inch wide mine conveyor belt. The mine conveyor would exit out of a portal located about 40 feet high on the east side of the right fork of C Canyon. Even though the mine portals are located in the right fork, the run of mine coal would be stockpiled in a storage area located in the left fork.

Coal would be transported from the right fork portals to the left fork stockpile by an 800 foot long, elevated overland conveyor gallery. This 2,000 ton per hour, 60 inch wide conveyor would be covered and supported along a series of box truss galleries, elevated approximately 50 to 60 feet above the right fork mine yard. These conveyor truss galleries would be supported by several two-legged steel bents spaced approximately 120 feet apart. After crossing the point that separates the right and left forks, the conveyor would terminate at a cantilevered discharge structure at a location above the coal stockpile area in the left fork. A conical coal pile would be built directly below the discharge structure. The pile would be about 80 feet high at full capacity and contain about 30,000 tons of coal. Additional storage can be obtained by pushing the pile northward onto the coal storage pad extending up the left fork.

- Coal Reclaiming Facilities - A 13 foot diameter multi-plate reclaim tunnel would be located below (underneath) the coal pile. Two reclaim draw down ports located at the end of the tunnel would allow coal to be reclaimed from the bottom of the pile directly onto a 54 inch reclaim conveyor located within the tunnel. Each reclaim port would contain a pile activator, a hydraulically operated single bladed shut-off gate, and a discharge chute leading to the reclaim conveyor. Each port would be capable of loading the reclaim conveyor at a full capacity of approximately 1,400 tons per hour. Once the coal has been loaded onto the reclaim conveyor, it would then be transported out from underneath the pile. The reclaim conveyor would bring the coal out of the tunnel and transport it to a crushing/screening building.

The crusher building would be an open steel structure containing a 40 hp, eight by 20 foot scalping screen which would remove all minus two inch coal ahead of the crusher. The plus two inch coal from the top screen deck would be fed to a 300 hp hammermill impact crusher where the coal would be reduced to a two inch product. All transfer points within the crusher building would utilize enclosed chute work to contain and control fugitive dust emissions. These transfer points include the transfer from the reclaim conveyor to the screen, the screen unders (minus two inch) to the loadout conveyor, the screen overs (plus two inch) to the crusher, and the crusher discharge (minus two inch) to the loadout conveyor.

Within the crusher building would also be located a self cleaning tramp iron magnet (located at the reclaim conveyor discharge pulley ahead of the crusher), and an automated sampling system. The crusher building and the coal reclaim tunnel would be separated by a 25 foot wire reinforced earth wall. The crusher building would be located on a bench on the lower (down-canyon) side of the wall and positioned in such a manner that gravity flow would aid the movement of coal through the screening, crushing, and sampling operations.

From the crusher building the crushed and screened two inch coal would then be loaded onto a covered 48 inch wide loadout conveyor operating at a rate of 1,400 tons per hour. The coal would then be transported to an automated truck loadout station. The truck loadout would be an elevated steel frame structure constructed

high enough to allow the trucks to be positioned under a contained chute during loading. Electronic sensors would determine when the truck is properly positioned under the chute. The feed conveyors (i.e., loadout conveyor and reclaim conveyor) would start and stop automatically to load the individual truck trailers with a predetermined amount of coal. Certified belt scales would be used to control the loading process.

The truck loadout would be located at the upper end of the truck loop. The loop would be long enough to accommodate up to four empty trucks in the queuing lane waiting to be loaded. After being loaded, the trucks would leave the mine site and haul the coal to a train loading facility located off-site. All conveyors would be covered and all conveyor transfer points would be enclosed.

- Electrical power - As previously mentioned as part of the proposed action, an overhead 69 KV power line would be installed to the mine. The proposed power line would terminate at a substation on the mine site. The mine substation would be located in the right fork below the portal bench. The substation would contain a 12 MVA 69 kV/12.5 kV transformer, along with various other electrical power control apparatus (air-break switches, visual disconnects, bussing, ground fault detection, vacuum circuit breakers, power factor capacitor banks, metering equipment, and a control room). From the secondary side of the substation, power would be distributed throughout the mine yard and to the underground workings at 12.5 kV. At various locations within the mine yard, the power would be routed through a set of 12.5 kV/4160 V/480 V transformer banks and motor control centers to operate the surface equipment. These combination transformer/motor control center units would be located at the crusher building, overhead conveyor drive station, mine fan, and shop/warehouse.

- Water Facilities - As previously mentioned as part of the proposed action, a water line from East Carbon City would be constructed to serve the culinary/potable requirements of the proposed mine. Water storage facilities (tanks) would be located on the surface to provide storage for usage and as pre-storage before being pumped into the mine to an underground storage sump for use in the mining operation. The surface storage tanks would be located above the bath house to provide sufficient static head (pressure) for yard distribution. Sewage from the administrative office and bathhouse would be treated by separate underground septic tanks and drain fields.

- Other Structures - Additional, smaller structures include miscellaneous storage sheds, pump house, above ground storage tanks (for fuel, water, and dust control chemicals), powder magazines, rock dust storage tanks and trash containment structures. All buildings and structures would be made of conventional construction materials including wood, masonry, or steel. Buildings would be color coordinated to blend in with the natural surroundings.

Potential Mitigation Areas - Two areas have been identified as potential sites for mitigation projects covering operational impacts associated with the proposed action. An area identified by the BLM as potentially addressing mitigation required for the anticipated wildlife impacts of the proposed action, would be located on public land at S.L.B.&M. T. 14 S., R. 13 E., Section 22 and 23 (FIGURE II-7). Mitigation activities associated with this area would include the hand planting of approximately 320 acres with 200 seedlings per acre. The species would be selected for their forage potential for area winter big game.

To address potential impacts to grazing use of the area, creation of water sources within the area could be constructed. This could either involve the use of the proposed water line, with a constructed tap line to access various troughs within the grazing use pastures, or construction of surface water collection ponds (PLATE IV). The approximate location of troughs would be T. 14 S., R. 13 E., Section 29, NE 1/4 NW 1/4, and Section 30, SW 1/4 SW 1/4.

To reduce the direct impact of the proposed undertaking on site 42CB-1184, a research design would be developed to analyze the adaptive lifeways of the people of early twentieth century rural Utah in general, and of the Clark Valley in particular. The research design would be multi-disciplinary in approach and involve not only analysis of material culture, but also utilize data from supplemental floral and faunal analysis to provide detailed information. A program of historical research, detailed mapping and controlled excavation would be used to implement the research design. Completion of the research would greatly increase the historical information available on historical homesteading in rural Utah. Findings from this detailed investigation would be used during the Section 106 of the National Historic Preservation Act (NRHP) consultation with the Utah State Historic Preservation Officer (USHPO) regarding these sites.

Though actual project impacts associated with the proposed action are to be determined within this document, either, both, or a combination of these mitigation projects would adequately address operational life of project impacts.

APPENDIX 5-5
WEST RIDGE MINE
CONSTRUCTION/RECLAMATION PLAN

PART I - CONSTRUCTION PLAN

The construction of the West Ridge minesite is described in outline and detail below. To a very great extent, the precepts of initial construction are inter-related to and inter-dependant upon the methods and techniques employed during final reclamation. In many ways reclamation at the West Ridge site is similar to the construction, but only in reverse order. To the extent that reclamation techniques and initial construction techniques are so inter-related, it is imperative to consider the reclamation plan (as presented in Part II of this plan) as an integral part of the construction plan and vice versa. The two separate plans constitute a whole and should be considered as such.

The following discussion of the construction plan is designed to describe the following items:

1) A general description of the C-Canyon minesite area, and the layout of the surface facilities within this area.

2) A general description of the soil resources presently existing in the minesite area.

3) A brief description of the experimental approach to topsoil protection proposed for this area.

4) A brief description of the nature of the fill material which will be used at the minesite.

5) A summary outline of the various area types within the minesite and how construction methods vary with each specific area.

6) A summary outline of the various construction tasks proposed for the minesite.

7) A detailed discussion of the various area types within the minesite and how construction methods vary with each specific area.

8) A detailed discussion of the various construction tasks proposed for the minesite.

1) A general description of the C-Canyon minesite area, and the layout of the surface facilities within this area.

The minesite surface facilities will be located in C-Canyon where the Lower Sunnyside coal seam out-crops to the surface. Because of the narrowness of the canyon in this area, surface facilities will be confined to a narrow strip along the bottom of the canyon. Suitable surface area for the minesite will be created by constructing a series of earthen pads within the canyon bottom. This will be accomplished by hauling in fill material and by leveling out the area in the bottom of the canyon drainage. The average gradient of C-Canyon in the minesite area is approximately 6.4%. Therefore, the mine pads will be constructed up through the canyon in a stair step manner. Each individual pad level will be dedicated to a specific function as part of the overall minesite operation. Access roads will connect the various pad levels with one another.

The proposed minesite is located in an area where the main canyon branches into two forks and resembles the letter Y. For simplicity, the minesite can be delineated into four distinct areas: the area located within the left fork (left fork); the area located within the right fork (right fork); the area located within the main canyon south of the forks (main canyon); and the area where the main canyon and the two forks converge (confluence). These terms (right fork, left fork, main canyon and confluence) will be used during the remainder of this discussion to refer generally to these respective areas.

Within the main canyon will be located the mine office and parking lot, and a series of sediment ponds. The Carbon County public road which provides access to the minesite will enter the mineyard in this area. Within the confluence area will be located the truck loop, and the truck loadout. The left fork will contain the crusher building, the coal storage pile and a topsoil storage area. The right fork will contain the employee parking area, bath house, substation, portal area, shop/warehouse material storage area and a topsoil storage area.

2) A general description of the topsoil resources presently existing in the minesite area.

Detailed topsoil surveys have been conducted at the minesite area by Jim Nyenhuis, a certified, profession soil scientist during the summer of 1997. These surveys were done in close consultation with DOGM's technical staff. As a result of these surveys the topsoil resources in this area have been adequately defined in terms of soils type, depth and areal extent. The results of these site specific surveys are in close agreement with the regional surveys conducted by the National Resource Conservation Service as presented in the "Soil Survey of Carbon Area, Utah".

At the C-Canyon minesite most of the topsoil exists in the confluence area and in the right fork. The confluence area contains pods of Brycan, Strych and Midfork. Within the right fork Strych is located along the canyon bottom near the flanks of the stream channel. Midfork also exists

along the more densely vegetated south slope (ie, north facing slope) of the right fork. In these areas topsoil depths vary from 2" to 24" and average about 12". The remainder of the minesite is predominantly rock outcrop/rubbleland which is essentially devoid of topsoil. Small isolated patches of Travessilla do occur within this rock outcrop/rubbleland, however. Map 2-2 depicts the location of the soil types in the mine yard, as well as the areal extent of each type. Appendix 2-2 describes the soil resources in greater detail.

3) A brief description of the experimental approach to topsoil protection proposed for this area.

The regulation for which Andalex is proposing to use an experimental practice would be R645-301-232 Topsoil and Subsoil Removal. Rather than removing the topsoil from the proposed mine yard area, Andalex proposes to protect the soil resource in-place by covering the soil surface with a geotextile fabric, then placing fill material over the fabric. At the time of reclamation, the fill material will be removed. The geotextile will then be removed, exposing the original, intact soil surface. To enhance the ability of the soil to absorb moisture, a mixture of PAM (Polyacrylamide) or best technology currently available at the time of reclamation, will be applied to the soil surface. PAM is designed to relieve compaction of the soil and open up channels for air and water penetration. The re-exposed soil structure will most likely be undamaged but lacking in microbes and nutrients. In order to regenerate naturally existing soil organisms and assist in reactivating soil activity, an inoculum will be applied to the soil to reestablish soil bacteria, microhorizia and mycelium. To enhance soil microbial establishment and promote more rapid stabilization of the soil, the seed mixture (as listed in Chapter 3) will be hand broadcast over the area and raked into the soil surface. A wood fiber mulch will be applied over the seed bed then the surface will be sprayed with a bonded fiber matrix tackifier. This type of tackifier has appeared to have a much greater ability than regular tackifier to hold and stabilize the soil surface. The bonded fiber matrix tackifier will be applied at a rate of 3,500 pounds per acre (or manufacturer's recommended application if greater).

The proposal to leave the existing topsoil in place and protected by a geotextile barrier within the filled areas of the minesite is considered an experimental procedure as defined in section R645-302-210 of the State of Utah Coal Mining Rules and SMCRA. The practice of protecting the topsoil in-place with a geotextile fabric has been previously approved in Utah in steep slope conditions (Genwal Resources, Crandall Canyon Mine, ACT 015/032).

Based on recommendations from experienced reclamation consultants there is every reason to believe that this procedure will be successful in meeting the reclamation standards required by SMCRA. However, as an added element of assurance for the success of reclamation at the West Ridge minesite, Andalex has preserved, under long-term lease, a separate source of high quality topsoil which can be used to reclaim the minesite if needed. The sole purpose of this topsoil borrow site is to be used for final reclamation on an as needed basis in the unlikely event that the left-in-

place topsoil at the minesite cannot be sufficiently revitalized and re-utilized at the time of final reclamation. Sufficient tests have been completed on this potential topsoil borrow site to determine that the topsoil resource exists in sufficient quality and quality to completely reclaim the minesite. This alternate topsoil borrow site is conveniently located within two miles of the minesite and contains soil material which is nearly identical in chemical and physical characteristics to the topsoil naturally existing at the minesite.

4) A brief description of the nature of the fill material which will be imported to the minesite to construct the mine pads.

The minesite earthen pads will be constructed using standard cut-and-fill techniques. However, based on computer generated earthwork models, fill volumes are expected to exceed available cut volumes by approximately 100,000 cubic yards. Therefore, additional fill material will have to be imported to complete the construction of the mine pads. Borrow material will be procured from an independent commercially operated material site located nearby. This material site will be a borrow pit licensed by Carbon County and developed primarily to serve the construction needs of the nearby Carbon County public road. The borrow site will be located on Utah School Trust Land and will be permitted, licensed, operated and reclaimed according to all applicable state environmental regulations.

The occurrence of construction-grade borrow material in this area is invariably associated with the pediment terraces which are located at the foot of the Book Cliffs. These pediment terraces slope away from the cliffs and are topped with a layer of gravelly material consisting of sandstone boulder fragments and cobbles within a fine grained matrix. This material is composed of weathered remnants of the nearby Book Cliffs stratigraphy (ie, Black Hawk Formation). This borrow material is chemically and physically identical to the native materials existing naturally in the vicinity of the minesite. Tests have determined that this borrow material is, in and of itself, a suitable topsoil (growth medium) material. In fact, in its natural condition it supports the exact vegetation types and species that are found close by at the minesite. Numerous such suitable borrow sites containing this type of material are located within a mile or two of the minesite which can be accessed to provide borrow material for construction of the county road as well as the minesite. Prior to being used as a construction medium the pit run material will first be run through a crusher to produce a 8" x 0" product. Therefore the fill material hauled to the minesite for pad construction will contain a high percentage of larger (8") rock fragments.

5) A summary outline of the various area types within the minesite and how construction methods vary with each specific area.

Construction/reclamation areas within the minesite can be defined accord to the following three criteria:

a) Whether the area lies within the canyon channel bottom or is located up along the canyon sideslopes away from the bottom (Channel or Slope)

b) Whether the area presently contains topsoil or whether it is rock outcrop/rubbleland presently devoid of topsoil (Topsoil or Rock)

c) Whether the area is to be filled over or else cut away during construction of the mine pads (Fill or Cut).

This delineation is important because construction in these various area types is, in large part, predicated on the requirements for final reclamation in those same areas. In these area-types, construction and reclamation are inter-related and inter-dependant. On an area-by-area basis initial construction methods are influenced by final reclamation requirements and final reclamation techniques are, in turn, dependant upon initial construction methods.

Any given area within the minesite can be defined in terms of a combination of the aforementioned criteria. Different construction and reclamation methods apply to each specific area type. Therefore, for the purpose of defining construction/reclamation methodologies the minesite can be categorized into the following area types.

a) Areas within and immediately adjacent to the stream channel; which are predominantly rock outcrop/rubbleland and therefore devoid of topsoil; which will be filled over during construction of the mine pads:
Channel (C), Rock (R), Fill (F) = C/R/F

b) Areas within and immediately adjacent to the stream channel; where topsoil is present; which will be filled over during construction of the mine pads:
Channel (C), Topsoil (T), Fill (F) = C/T/F

c) Areas located up along the canyon sideslope away from the channel; where topsoil is present; which will be filled over during construction of the mine pads: Slope (S), Topsoil (T), Fill (F) = S/T/F

d) Areas located along the canyon sideslopes away from the stream channel; where topsoil is present; which will be cut away during construction of the mine pads: Slope

(S), Topsoil (T), Cut (C) = S/T/C

e) Areas located up along the canyon sideslope away from the stream channel; which are predominantly rock outcrop/rubbleland and therefore devoid of topsoil; which will be filled over during construction of the mine pads:
Slope (S), Rock (R), Fill (F) = S/R/F
f) Areas located up along the canyon sideslope away from the stream channel; which are predominantly rock outcrop/rubbleland and therefore devoid of topsoil; which will be cut away during construction of the mine pads:
Slope (S), Rock (R), Cut (C)= S/R/C

Note: Refer to item 7) for details of these construction area types.

6) A summary outline of the various construction tasks proposed for the minesite.

In addition to the construction area-types mentioned previously, the minesite construction area can also be defined in terms of the major tasks that are necessary for completion of the surface facilities. These tasks, listed in approximate order of completion, include the following:

a) Clearing and grubbing of trees and shrubs
b) Installation of the bypass culvert and in-place protection of channel with geotextile
c) Construction of sediment pond
d) Protection of in-place topsoil resources
e) Topsoil removal, salvage and stockpiling
f) Face-up of coal seam, preparation of portal highwall area
g) Construction of various earthen pad levels and interconnecting access roads
h) Installation of ditches, culverts and other drainage controls
i) Construction of coal handling facilities and associated structures

Note: Refer to item 8) for details of these construction tasks

7) A detailed discussion of the various area types within the minesite and how construction methods vary with each specific area.

7a) AreaType C/R/F [Channel (C), Rock (R), Fill (F)] : Areas within and immediately adjacent to the stream channel; which is predominantly rock outcrop/rubbleland and therefore devoid of topsoil; which will be filled over during construction of the mine pads. These areas occur primarily in the bottom of the main canyon and in the bottom of the left fork.

Construction Method: Before any pad construction can occur in this area, the bypass culvert must first be installed. Since no topsoil exists in these areas, topsoil salvage/protection is not a factor during construction. Construction will start at the lower (downstream) end of the minesite and progress up canyon. The alignment of the culvert installation will closely follow the existing channel alignment, both vertically and horizontally. This will insure a replicated sinuosity and gradient of the original channel upon final reclamation when the culvert is removed and the channel is restored to its existing configuration. A backhoe will advance up the channel bottom and prepare the bottom for the culvert as it progresses. Large boulders will be moved out of channel and placed up along the bank out of the way. These boulders will be repositioned along the bank in a manner that allows them to be conveniently accessible during final reclamation at which time they will be relocated back into the channel as the channel is being restored to its approximate original morphology. After the boulders have been moved out of the way, the channel bottom will be graded as necessary to accommodate the culvert installation. Humps will be smoothed out and depressions will be filled in using native materials. A thin lift of imported borrow material may be added in places to serve as a bedding material and supplement the grading process, especially in certain areas where grade breaks are more pronounced.

Immediately after the channel has been prepared the culvert will be installed. Angled culvert joints will be pre-engineered and pre-fabricated as necessary to insure that the culvert can be curved as needed to closely follow the existing channel alignment and preserve the natural stream bed sinuosity. Shortly after the culvert is laid in the prepared channel it will be backfilled using an imported crushed borrow material. This borrow material will be obtained from a nearby source and will have chemical and physical properties which are nearly identical to the native earth materials existing naturally at the C-Canyon minesite. As culvert installation and backfilling progresses, the covered-over culvert area will provide an access way into the area for construction equipment and materials for the remainder of the minesite earthwork construction activity.

7b) Area Type C/T/F [Channel (C), Topsoil (T), Fill (F)]: Areas within and immediately adjacent to the stream channel; where topsoil is present; which will be filled over during construction of the mine pads. This occurs primarily along the bottom of the right fork.

Construction Method: Before any pad construction can occur in this area the bypass culvert must first be installed. Culvert installation will follow the same procedures as described previously for the channel bottom/rock rubble area. There will be one major exception however. Because soil resources presently exist along the flanks of the channel in the topsoil area special procedures will be implemented to preserve and protect these topsoil resources. After the channel bottom has been prepared for the culvert, but before the culvert is actually installed, the channel will be draped with a geotextile material. The geotextile will line the channel and will extend up and over the banks on either side of the channel for distance

placed over the entire surface area to be filled. After the geotextile has been laid in place fill material will then be imported and placed in compacted 18"-24" layers as described earlier.

7e) Area Type S/R/C [Slope (S), Rock (R), Cut (C)]: Areas contained rock outcrop/rubbleland and which wil be cut away. These areas occur along the sides of the canyon where the sideslopes adjoin the upper (surface) level of the fill pads, particularly in the main canyon, the left fork, and the northwest side of the right fork.

Construction methods: Cut areas along the hillslopes within the mineyard are designed to expand and define the yard limits to best accommodate the necessary surface structures, to provide neat-line adjustments for linear features such as roadways and ditches, and to provide clear slopes to facilitate long-term yard maintenance. Like all areas within the proposed minesite these areas will first be grubbed to remove the existing shrubs and vegetation. Rubble from the cuts will be placed in the pad fill along with the imported borrow material. Within the rubbleland areas, cut banks will normally be held to 1:1 slopes or less. In the rock outcrop areas cuts will consist of little more than clearing the slopes of loose weathered rubble and detritus down to bedrock.

7f) Area Type S/T/C [Slope (S), Topsoil (T), Cut (C)]: Areas located along the canyon sideslope away from the stream channel; where topsoil is present; which will be cut away during construction of the mine pads: This occurs primarily along the southeast side of the right fork, at the confluence, and isolated locations within the left fork.

Construction methods. Construction methods in these areas will be similar to those previously described for cuts in the rock outcrop/rubbleland areas with one major exception. After the area has been grubbed, topsoil will be carefully salvaged and hauled to a dedicated storage area. Topsoil salvage and stockpiling will be accomplished under the direction of a trained soil scientist familiar with the soil resources of the area. The soil scientist will be on-site at all times during the soil salvage operations. After all topsoil has been salvaged the substrate material can then be cut back to accommodate the overall design of the minesite. Cut substrate material will be placed in the pad fill, along with the imported borrow material. If the to-be-salvaged topsoil in different areas is distinctly different in terms of chemical and physical classification, the soils will then be segregated according to soil type and stockpiled in separated piles. This is to insure that upon final reclamation specific topsoils can be reapplied back to their specific original locations.

Designated topsoil storage areas are located at the upper end of the material storage area in the right fork and (if needed) the upper end of the coal storage area in the left fork. Prior to receiving salvaged topsoil, the storage areas will first be prepared. Large boulders will be relocated to make it easier to reclaim the topsoil in the future during final reclamation. These areas will not be grubbed however. Naturally existing organic vegetative material will do

nothing but enhance the quality of the future soil resources stored on these areas.

8) A detailed discussion of the construction tasks proposed for the minesite.

As part of the overall minesite development plan, certain major construction tasks must be accomplished in a prescribed manner. Most of these construction tasks are common to many, if not all the area-types described above. The following tasks are listed in order in which they would generally be expected to occur within any given area of the minesite. However, in practice many of these construction tasks will be occurring simutaneously, but at different areas, throughout the minesite. This is attributable to the fact that the minesite construction will be done over a long narrow stretch of the canyon bottom. Most construction tasks will begin at the lower, down-canyon end of the mineyard and proceed up canyon. As primary initial tasks are completed at the lower reaches of the site, secondary tasks can begin even though the primary tasks may not yet be completed in the upper reaches of the site.

8a) Clearing & grubbing. One of the earlier phases of construction will involve the removal of all trees and shrubs (ie, clearing and grubbing) from the 25 acre minesite area. Larger commercially valuable trees will be harvested and hauled away. Smaller trees and shrubs will be cleared and disposed of on-site. This slash material will be buried in a controlled manner within the pad fill in non-structural areas such as the coal storage pad in the left fork and the material storage area in the right fork. In order to avoid compaction complications, slash will be buried away from (ie, not in close proximity to) the bypass culvert which will be installed in the bottom of the existing drainage.

8b) Installation of the bypass culvert The initial phase of construction will involve installation of the undisturbed drainage culvert (bypass culvert). This culvert will be installed within the existing channel and is designed to carry the natural canyon drainage underneath the minesite. This culvert system allows the natural drainage to "bypass" the disturbed area of the minesite. This separation also allows the disturbed area drainage to report to sediment control features on the surface thereby preventing intermingling with the natural undisturbed drainage flowing through the bypass culvert.

Prior to culvert installation the channel bottom will first be prepared. A backhoe will be used to smooth out and grade the channel bottom. Large boulders will be moved aside and irregularities (humps, bumps and depressions within the channel bottom) will be filled in utilizing native materials. Where needed, a thin layer of bedding material (imported crushed 8" x 0" borrow) may be laid in the channel bottom to aid in culvert installation. In areas of pronounced grade breaks additional bedding material may be required to provide an adequate vertical alignment for the culvert . In other areas where the existing channel is already

smooth and uniform no bedding material may be required. To the maximum extent possible the alignment of the bypass culvert installation will closely follow the existing stream channel. Culvert angle-joints will be pre-engineered and pre-fabricated to insure that the existing channel alignment can be followed as closely as possible.

Boulders will be removed from the culvert path and relocated up along the flanks of the channel. In this location the boulders will be in convenient proximity to be repositioned back into the stream channel upon final reclamation to replicate the pre-existing pre-mining geomorphology of the channel. Trees and shrubs will be removed from the channelway prior to culvert installation. In areas where topsoil resources are located within and along the banks of the existing channel, trees and shrubs will be cut off about 6'-8" above the ground surface. Stumps and roots will be left in place to help stabilize the existing soil and the existing channel configuration.

After the channel has been readied for culvert installation (ie, graded, bedding material placed, boulders removed and vegetation removed) the culvert can then be installed. The typical pre-culverted channel will be about 10'-12' wide across the bottom and will have natural 2:1 sideslopes. Before the culvert is installed in the topsoil areas (C/T/F) the channel bottom will first be lined with a geotextile fabric. This fabric will be placed across the full width of the channel and will extend up the side banks at least 5' on either side of the channel. The purpose of the geotextile is to provide a separation barrier to protect the channel and the stream bank topsoil, and to preserve it in its natural condition prior to being filled over during subsequent construction of the mine pads. This will help insure that upon final reclamation the channel morphology can be adequately restored.

After the geotextile has been placed through the prepared channel, the culvert will then be installed on top of it. As explained earlier, the culvert alignment will closely follow the existing channel alignment. However, in a few selected areas the culvert alignment will have to be shifted slightly to accommodate important surface structures, such as the mine fan and the substation. After the culvert has been laid in place it will immediately be back filled using the same imported 8" x 0" fill material that was used for the bedding material. Vertical risers will be installed at various locations along the length of the culvert to aid in hydraulic venting and to serve as access for inspection and maintenance. After the culvert has been backfilled and compacted, the area over top the conveyor can be used as an access way for machinery and material involved in the remainder of the site construction.

8c) Construction of the Sediment Ponds. Installation of the bypass culvert will begin at the lower (down canyon) end of the minesite. Once the culvert installation has progressed up canyon approximately 500', construction of the initial sediment ponds can begin. The sediment pond actually consist of three individual smaller ponds or cells. Each of these cells will be constructed in the bottom of the canyon directly over top the bypass culvert. The

lower pond (cell C) will be constructed first, after the bypass culvert has been installed through that area. As construction of the culvert continues upstream the remaining two pond cells will be installed in sequence. In this manner the sediment ponds will be installed as early as possible in the construction schedule. These ponds will then be in place for the entirety of the remaining construction activities and will provide maximum sediment control for the rest of the project.

The three-tiered multi-cell pond arrangement is well suited to the steep gradient and narrow confines of the conveyor. The ponds will be constructed in a cascading arrangement whereby most minesite disturbed area drainage reports initially to the uppermost pond. If the upper pond fills to capacity, excess runoff will report to the middle pond through an open channel spillway located between the ponds. If the second pond fills to capacity, the excess run-off will then report to the third and lowermost pond. The combined capacity of the three-celled pond is well in excess of the 10 yr 24 hr requirements. However, if the total pond capacity is exceeded, the over flow from the third pond will exit through a riser-type culvert primary spillway equipped with an oil skimmer. This riser spillway will lead directly to the main bypass culvert located below the sediment ponds. One advantage of the multi-celled pond is that most sediment will tend to collect in the upper pond. This will greatly simplify sediment monitoring and clean out. The three-cell arrangement also precludes the possibility of short-circuiting and simplifies the process of decanting the pond in a manner that meets UPDES discharge requirements.

All open channel spillways will be constructed to pass the 10 yr 24 hr storm event. Spillways will have a bottom width of 5'; a freeboard depth of 2'; and 2:1 sideslopes and will be lined with concrete or grouted riprap. The lower pond will also be equipped with an open channel emergency spillway capable of handling a 25 yr 6 hr storm event. Riprap will be installed at the outlet of all open channel spillways to protect the earthen structures from erosional forces.

8d) Protection of in-place topsoil. Within the minesite there are sideslope areas where topsoil presently exists and which will be filled over during construction (S/T/F area type). In these areas the topsoil resource will be protected in place and preserved in its existing state. Prior to placing fill material over these areas they must first be cleared and grubbed of trees and shrubs. Trees will be cut off about 6"-8" above the ground and the roots will be left in place to stabilize the soil until the time of final reclamation. After the area has been grubbed it will be completely draped with a long-lasting geotextile fabric. Once the fabric is in place the area will then be filled over with an imported borrow material. This pad fill will be placed in compacted lifts. As the fill is built higher and higher up the slopes, additional layers of geotextile will be added to maintain the separation between the left-in-place topsoil and the newly placed pad fill.

The purpose of the geotextile is to protect the existing topsoil resources in their present in-place condition, and to provide a barrier between the in-place topsoil and the imported fill material. By using the geotextile, the existing topsoil located on the channel and slopes can be left in place. Leaving the soil intact and in-place will maintain the soil cohesiveness. Roots and soil structure will help promote soil stability, minimize the potential for erosion and soil sloughage. The soil horizons will remain intact to help promote faster revegetation of the slopes. During final reclamation the fill material and geotextile will be removed to re-expose the existing topsoil.

It is anticipated that after the fill is removed and the geotextile fabric is peeled away, the underlying soil material along the channel banks and slopes will be somewhat compacted. To enhance the ability of the soil to absorb moisture, a mixture of PAM (Polyacrylamide) or best technology currently available at the time of reclamation, will be applied to the soil surface. PAM is designed to relieve compaction of the soil and open up channels for air and water penetration.

8e) Topsoil removal, salvage and stockpiling. Within the minesite there are sideslope areas where topsoil presently exists and which will be cut away during construction (S/T/C area type). In these areas the topsoil resource will be carefully removed and stockpiled before any additional excavation continues. All topsoil salvaging will be done under the direction of a competent soils scientist. Based on the soil surveys completed in this area up to 24" of topsoil may exist in these areas which could be salvaged. Topsoil in these areas will be salvaged with backhoes, trackhoes and/or small front end loaders it will be hauled by dump trucks to the designated topsoil storage areas. If the topsoil depth in the S/T/C areas averages 18" up to 6,506 cubic yards of topsoil may be available to be salvaged and stockpiled.

It should also be noted that small isolated pockets of Travessilla soils exist within the rock outcrop/rubbleland areas of the minesite. In fill areas (S/R/F) these soils will be protected with geotextile as described above; in cut areas (S/R/C) these soils will be salvaged under the direction of the soil scientist.

Two topsoil storage areas are being proposed: one at the upper end of the material storage area in the right fork, the other at the upper end of the coal storage pad in the left fork. The right fork area will be the primary storage area. The left fork storage area will be utilized if needed in the event that the right fork area is filled to capacity and additional storage area is required. The left fork storage area may also be utilized if separate and segregated stockpiles are needed to maintain the integrity and identity of the individual soil types present at the site (ie, Brycan, Strych and Midfork) for future reclamation.

8f) Face up of coal seam/preparation of portal highwall. As soon as possible after construction begins the coal seam will be faced up and the portal highwall will be excavated. The portals will be located on the southeast side of canyon within the right fork. Prior to facing up the portals the area will first be cleared and grubbed, and topsoil will be salvaged. The extent of coal seam weathering and/or burn will dictate the extent of the highwall needed to access the solid coal face for the purpose of installing the portals. The highwall must be constructed long enough to accommodate at least four portal openings (fan, belt, two intakes). However, the mine opening has been designed to require the absolute minimum of highwall length. Minimizing the extent of the highwall is an important consideration not only in the initial mine development but also and even more so for final reclamation. All efforts will be made to not only minimize the length of the highwall, but also to minimize its height as well. The highwall will be constructed (and stabilized as necessary) to conform to the safety requirements of MSHA. In order to achieve minimum disturbance of the canyon side slope the highwall will be cut into the solid rock as steeply as possible while still maintaining the necessary long term structural stability.

8g) Construction of the various earthen pad levels and interconnecting access roads. As mentioned previously fill material (borrow) will have to be imported to the site in order to construct the mine pads necessary to accommodate the long term operational requirements of the mine. This material will come from a commercial borrow pit located in the near vicinity of the minesite. The borrow material will be chemically and physically similar to the native materials existing at the minesite.

According to computer models of the minesite earthwork, approximately 100,000 yds of borrow will have to be imported to achieve the proposed mineyard configuration. This material will be crushed to an 8" x 0" product before being delivered to the site. It will be placed in 18"-24" lifts and compacted to a minimum 90% density for nonstructural areas, and to 95% density in structural areas. Nonstructural areas include parking lots, material storage areas and coal storage areas. Structural areas include all areas under buildings, conveyor bents, substation, backfilled areas around culverts and reclaim tunnels, roadways, mine fan and reinforced earth retaining walls (Hilfiker). Experience has shown that this material can usually exceed 95% compaction using standard wheel rolling methods, although vibratory compaction will be used in critical structural areas. All earthwork will be required to meet a minimum of 4000 psf load-bearing capacity.

Prior to placement of fill material, the site will first be cleared and grubbed. In topsoil areas, geotextile will be placed in the channel bottom to preserve the geomorphology of the channel for final reclamation. Geotextile will also be placed over topsoil areas along the sideslopes to preserve the in-place soil resources for final reclamation.

Pad construction cannot begin until after the bypass culvert has been installed and backfilled,

trees and shrubs removed, and geotextile laid down. In general, the individual pad levels will be constructed beginning with the downstream working areas and will proceed upstream as completion of the culvert allows. However, emphasis and priority will be given to those pad levels that are designed to accommodate key structural elements of the surface facilities. These include the pad levels associated with the coal pile reclaim system, the substation, the elevated conveyor gallery, bath house, and shop/warehouse building.

Although most of the pad levels will be constructed by filling the area with imported borrow, some pad construction will involve cutting into the existing side slopes. Under normal construction situations sideslope cuts will be minimal, and will not usually extend up-slope more than about 20' above the completed pad level. The primary purpose of the sideslope cuts is not to generate fill volumes, but rather to provide uniform yard boundaries for proper alignment of ditches, roads, buildings and other peripheral structures. Cut slopes area also necessary to predefine the limits of the pads for the purpose of layout and engineering design. Clear slopes are also needed to assure long term site maintenance. In order to meet the objective of yard limit definition, the slopes in some areas may be actually constructed by placing fill against the sides slopes rather than cutting into the existing hillside.

In topsoiled areas (S/T/C areas), before any slope cuts are made, topsoil will first be salvaged and stockpiled. All topsoil salvaging will be under the direction of a qualified topsoil scientist. After the topsoil has been removed, the substate material will be excavated. Cut material will be incorporated into the pad fill along with the imported fill material. Sideslope cuts may be greater in some selected area where pre-engineered design parameters dictate. These areas include roadways, portal highway, conveyor runs and various building sites.

8h) Installation of ditches, culverts and other drainage controls. As stated earlier, the sediment pond will be constructed as early as possible in order to provide maximum sediment control during the term of the construction project. Once the pad levels are constructed, along with the interconnecting roadways, drainage control ditches and culverts will be constructed and culverts installed. Disturbed area ditches and culverts will be designed to handle a 10 yr 24 hr storm event. Where necessary, ditches will be lined with concrete or riprap to prevent erosion where velocities are expected to exceed 5 feet/sec. Culvert inlets will be designed to provide adequate freeboard for design flows; outlets will be riprapped where necessary to prevent scouring.

8i) Construction of coal handling facilities and associated structures. Construction of the coal handling facilities will be scheduled to allow the mine to get into full production as quickly as possible. The underground mining operation cannot function smoothly until the elevated conveyor gallery and discharge structure are fully operational. On the other hand, the mine conveyor cannot become fully operational until the mine working are developed far enough underground from the portals to allow the conveyor to be extended into the mine works and become an integral working part of the continuous miner production section. Once the initial mine works have began connected up underground with crosscuts, the conveyor can then become operational.

Other integral components of the coal handling facilities necessary for full production include the coal reclaim tunnel, crusher building, truck loadout and interconnecting conveyors. Only after this system is completely operational can mine development and coal production begin in earnest. Other important structures necessary for full-scale mine surface production include the main substation, the water delivery system, and the mine ventilation fan.

After the critical path coal handling facilities and mine development structures are fully operational and the underground mine development is proceeding on course, full attention can be focused on completing the ancillary surface facilities. These include permanent structures such as the mine office, bath house, shop/warehouse and support structures such as the bulk rock-dust system, oil and grease storage, etc. Once the permanent structures are finished the temporary accommodations used during construction can be removed from the site.

PART II - RECLAMATION PLAN

The reclamation of the disturbed areas of the West Ridge minesite is described in outline and detail below. To a very great extent the precepts of reclamation are inter-related to and inter-dependant upon the methods and techniques employed during initial construction. In many ways reclamation at the West Ridge site is similar to the construction, but only in reverse order. To the extent that reclamation techniques and initial construction techniques are so interrelated it is imperative to consider the reclamation plan as an integral part of the construction plan (as presented in Part I of this plan) and vice versa. The two separate plans constitute a whole and should be considered as such.

Andalex recognizes that development of a feasible reclamation plan for final reclamation of the expansion area containing the best available reclamation methodology is an essential part of the permitting process. Therefore, Andalex has contacted consultants with revegetation and reclamation experience to gather together the best reclamation techniques for reclamation of the C-Canyon area. JBR Environmental Consultants, who has had prior experience with reclamation in difficult areas, has provided a letter detailing reclamation methodology that they believe will contribute to the successful reclamation of this area. This letter, included as Attachment 1, was written in response to Andalex discussions held with JBR as the reclamation plan was being conceived. Andalex feels that incorporation of the various reclamation techniques that JBR has identified as being successful in past situations will greatly enhance the success of this reclamation effort. Andalex also recognizes that in the time between now and when final reclamation is actually done, technology may evolve new and better reclamation ideas. Andalex commits to modifying the reclamation plan prior to final reclamation should better reclamation products and methodology become available. This reclamation plan will be reviewed prior to implementation to incorporate applicable methodology and techniques which are considered best technology currently available (BTCA) at the time of reclamation.

The regulation for which Andalex is proposing to use an experimental practice would be R645-301-232 Topsoil and Subsoil Removal. Rather than removing the topsoil from the proposed mine yard area, Andalex proposes to protect the soil resource in-place by covering the soil surface with a geotextile fabric, then placing fill material over the fabric. At the time of reclamation, the fill material will be removed. The geotextile will then be removed, exposing the original, intact soil surface. To enhance the ability of the soil to absorb moisture, a mixture of PAM (Polyacrylamide) or best technology currently available at the time of reclamation, will be applied to the soil surface. PAM is designed to relieve compaction of the soil and open up channels for air and water penetration. The re-exposed soil structure will most likely be undamaged but lacking in microbes and nutrients. In order to regenerate naturally existing soil organisms and assist in reactivating soil activity, an inoculum will be applied to the soil to reestablish soil bacteria, microhorizia and mycelium. To enhance soil microbial establishment and promote more rapid stabilization of the soil, the seed mixture (as listed in Chapter 3) will be hand broadcast over the area and raked into the soil

surface. A wood fiber mulch will be applied over the seed bed then the surface will be sprayed with a bonded fiber matrix tackifier. This type of tackifier has appeared to have a much greater ability than regular tackifier to hold and stabilize the soil surface. The bonded fiber matrix tackifier will be applied at a rate of 3,500 pounds per acre (or manufacturer's recommended application if greater).

The proposal to leave the existing topsoil in place and protected by a geotextile barrier within the filled areas of the minesite is considered an experimental procedure as defined in section R645-302-210 of the State of Utah Coal Mining Rules and SMCRA. The practice of protecting the topsoil in-place with a geotextile fabric has been previously approved in Utah in steep slope conditions (Genwal Resources, Crandall Canyon Mine, ACT 015/032).

Based on recommendations from experienced reclamation consultants there is every reason to believe that this procedure will be successful in meeting the reclamation standards required by SMCRA. However, as an added element of assurance for the success of reclamation at the West Ridge minesite, Andalex has preserved, under long-term lease, a separate source of high quality topsoil which can be used to reclaim the minesite if needed. The sole purpose of this topsoil borrow site is to be used for final reclamation on an as needed basis in the unlikely event that the left-in-place topsoil at the minesite cannot be sufficiently revitalized and re-utilized at the time of final reclamation. Sufficient tests have been completed on this potential topsoil borrow site to determine that the topsoil resource exists in sufficient quality and quality to completely reclaim the minesite. This alternate topsoil borrow site is conveniently located within two miles of the minesite and contains soil material which is nearly identical in chemical and physical characteristics to the topsoil naturally existing at the minesite.

The primary goals of reclamation at the West Ridge minesite are:

1) Re-establish approximate original contour
2) Eliminate all mine-related highwalls
3) Re-apply topsoil in areas where topsoil was salvaged during construction
4) Re-establish the original stream channel geomorphology
5) Prevent erosion of the reclaimed minesite and excess siltation in the undisturbed drainages.
6) Re-establish vegetation cover and density equivalent to the pre-mining condition

Construction/reclamation areas within the minesite can be defined according to the following three criteria:

a) Whether the area lies within the canyon channel bottom or is located up along the canyon sideslopes away from the bottom (Channel or Slope)

b) Whether the area presently contains topsoil or whether it is rock outcrop/rubbleland presently devoid of topsoil (Topsoil or Rock)

c) Whether the area is to be filled over or else cut away during construction of the mine pads (Fill or Cut).

This delineation is important because reclamation in these various area types is, in large part, predicated on the methods of initial construction used in those same areas. In these area-types, construction and reclamation are inter-related and inter-dependant. On an area-by-area basis initial construction methods are influenced by final reclamation requirements and final reclamation techniques are, in turn, dependant upon initial construction methods.

Any given area within the minesite can be defined in terms of a combination of the aforementioned criteria. Different construction and reclamation methods apply to each specific area type. Therefore, for the purpose of defining construction/reclamation methodologies the minesite can be categorized into the following six area types. These area types are identical to the area types described previously in the construction plan (Part I of this plan), and repeated here for completeness:

a) Areas within and immediately adjacent to the [pre-existing] stream channel; which are predominantly rock outcrop/rubbleland and therefore devoid of topsoil; which were filled over during construction of the mine pads:
Channel (C), Rock (R), Fill (F) = C/R/F

b) Areas within and immediately adjacent to the [pre-existing] stream channel; where topsoil is present [and has been protected in-place with geotextile]; which were filled over during construction of the mine pads:
Channel (C), Topsoil (T), Fill (F) = C/T/F

c) Areas located up along the [pre-existing] canyon sideslopes away from the channel; where topsoil is present [and has been protected in-place with geotextile]; which were filled over during construction of the mine pads: Slope (S), Topsoil (T), Fill (F) = S/T/F

d) Areas located up along the canyon sideslope away from the [pre-existing] stream channel; where topsoil was previously present [but was salvaged and stockpiled during construction]; which were cut away during construction of the mine pads:
Slope (S), Topsoil (T), Cut (C) = S/T/C

e) Areas located up along the canyon sideslope away from the [pre-existing] stream channel; which are predominantly rock outcrop/rubbleland and therefore devoid of

topsoil; which were filled over during construction of the mine pads:
Slope (S), Rock (R), Fill (F) = S/R/F

f) Areas located up along the canyon sideslope away from the [pre-existing] stream channel; which are predominantly rock outcrop/rubbleland and therefore devoid of topsoil; which were cut away during construction of the mine pads:
Slope (S), Rock (R), Cut (C)= S/R/C

Note: Refer to item 7) for details of these construction area types.

In outline form the key reclamation tasks are as follows:

1) Remove all structures, dispose of off-site
2) Back fill and regrade all cut areas
3) Reapply topsoil to backfilled cut slopes (S/T/C areas)
4) Revegetate the regraded cut slopes
5) Remove pad fill/re-expose and revitalize the left-in-place topsoil
6) Re-expose the original rock outcrop/rubbleland surface and revegetate
7) Remove the bypass culvert/re-expose the original stream channel
8) Revitalize and revegetate the channel.
9) Install silt traps and other suitable sediment control features.

These activities are listed in the approximate sequential order in which they will be performed. However, just as during construction, certain later-stage tasks may be on-going in certain areas of the minesite while other early-stage tasks are just beginning in other areas.

1) Remove all structures, dispose off-site; All coal handling facilities, buildings and ancillary structures will be dismantled, disassembled, demolished and then hauled away from the site. Materials which cannot be salvaged or recycled will be disposed of in an approved solid waste land fill such as the ECDC facility located nearby in East Carbon. Structures to be removed include (but are not limited to) the mine office, bath house, shop/warehouse, substation, conveyor gallery and bents, discharge structure, reclaim tunnel, crusher building, reclaim conveyor, truck loadout, loadout conveyor, rock dust bins, water tanks, fuel tanks, garbage vaults, power lines, water lines, culverts, pump house, powder magazines, portals, mine fan, concrete, etc. Asphalt, cleaning solvents, paints and other similar materials will be disposed of in an approved RCRA disposal site.

The coal pile in the left fork will be completely removed from the site prior to final reclamation. Any coal fines which remain on the hill slopes immediately adjacent to the coal

stockpile area will be vacuumed clean prior to beginning final reclamation.

2) Backfill and re-grade all cut areas; All cut areas (S/T/C and S/R/C areas) will be restored to approximate original contour. These areas will be backfilled and regraded using fill material taken from the adjacent pad area. Fill will be placed in the cuts in 18"-24" lifts and compacted sufficiently to achieve adequate structural stability. Tests have shown that this fill material can achieve structural stability with a safety factor much greater than 1.3 on slopes as steep as 1:1. (Refer to Appendix 5-4) In general, restored cut slopes will have a final slope of about 2:1 which is close to the predominate slope angle existing naturally in the canyon in its pre-mining condition.

Track hoes, dozers, and/or front end loaders will be used to backfill the cuts. Heavy equipment will utilize the existing adjacent pads as work platforms from which the backfilling operation can be staged. Fill material will be inspected and tested to insure that it is free of salts, oils, petroleum products and any other contaminants before being used as backfill in the cut areas. The surface of the regraded backfilled area will be roughed with a backhoe to provide a suitable surface for subsequent top soiling and/or reseeding applications. Boulders and large rocks will be harvested from the nearby vicinity and placed along the surface of the regraded slopes to replicate the pre-mining slope condition.

Special backfilling techniques will be applied at the highwall area and the conveyor nose cut. Of the entire minesite these are only areas that involve steep slope cuts. The pre-existing pre-mining slopes in these areas are as much as 40 degrees (i.e. nearly 1:1) measured from horizontal. In order to adequately access (face up) the coal seam while minimizing the amount of hillside disturbance, the highwall cut slope will have been made as steep and sheer as safely possible during initial construction. From a reclamation standpoint the challenge of the portal area is to re-establish approximate original contour, eliminate the highwall, and maintain the stability of the backfill material in the process. This will be accomplished in the portal area and nose cut area by utilizing large boulders. Large angular boulders will be stacked one on top of the other along the outer edge of the portal bench along the toe of the slope. Fill slopes reinforced with large boulders, in this manner, can easily stand at the requisite 40 degree incline needed to reestablish the natural slope in this area. Regular 8" x 0" fill material could be used to fill in the void behind the boulders on the inside of the bench where the stability criteria is not as critical a factor. Boulders, and other backfill, would be placed using a backhoe starting at the up dip (southern) end of the portal bench and working northward. As the boulder slope is completed, topsoil would be placed into the surface nooks between the boulders. The surface of the boulder slope would then be revegetated in the same manner as the rest of the reclaimed site. Due to the steepness of the boulder slope some of the topsoil may slide off, leaving the boulder surface visible as bare rock. However, this rocky appearance will be very much in keeping with the natural appearance of the canyon slope in its pre-existing pre-mining conditions. In fact, the coal seam sits atop a massive sandstone which presently manifests itself as a broad bare rock outcrop in the vicinity of the proposed portals. It should be

noted that all principals of reclamation described herein for the portal highwall apply to the conveyor nose cut equally as well.

Note: Final reclamation of the portal highwall will not take place until after the pad backfill material has been removed from the pads, transported into the portals, and placed permanently in the underground mine workings as described in item 5) below.

3) Reapply topsoil to the backfilled cut slopes; After the cut (S/T/C areas) slopes have been backfilled and regraded to approximate original conditions and regraded to approximate original conditions the slopes will then be re-topsoiled. Prior to replacing the topsoil the surface of the slopes will be roughened and pitted with a backhoe bucked to prevent slippage of the topsoil layer and promote root penetration. To the extent practicable, pre-existing topsoil types will be returned to their original locations during reclamation; Brycan topsoil will be returned to the Brycan area near the confluence area. Midfork soils will be returned to the Midfork areas on the southeast slope of the right fork and other isolated areas as identified on Map 2-2. Topsoil will not be reapplied to the rock outcrop/rubbleland areas (i.e., S/R/C areas) which, by definition, are naturally devoid of topsoil.

Topsoil will be reapplied to the slopes in the conventional manner. Topsoil will be hauled in by truck and spread with a front end loader and/or backhoe. Areas to receive topsoil will be marked with stakes indicating the depth of application. A reclamation supervisor will oversee the topsoil redistribution operation. Topsoil will be left in a roughened condition prior to seeding to minimize compaction and erosion as well as promote infiltration of precipitation.

After approximate original contour (AOC) is achieved, the surface will be prepared according to the R-M-V (roughen, mulch, revegetate) method. Pocking consists of imprinting the surface with a pattern of depressions measuring approximately 18" x 24" x 8" deep. The purpose of these pocks is to capture and retain water (moisture), and provide a cradle for seedlings and other plant materials.

Andalex has committed to adding nutrients and determined by laboratory analysis conducted on topsoil samples taken before topsoil redistribution and during final reclamation. The method used to ensure adequate and representative samples from different locations and depths within the topsoil stockpile include: taking two soil samples per stockpile and collecting samples with a soil auger at two foot increments. Samples of the undisturbed soil adjacent to the regraded site will also be taken for a baseline chemical reference. Fertilizer will be added to the redistributed topsoil as indicated by laboratory results.

4) Revegetate the regraded cut slopes; After the cut slopes have been re-contoured and/or re-topsoiled they can then be revegetated. Much of the revegetation efforts on these slopes can be accomplished by using the adjacent pad fill areas as a work platform for equipment and materials.

Revegetation procedures for the regraded cut slopes involves a four step program: 1) application of fertilizer (if laboratory testing indicates a need, 2) hydroseed, 3) hydro mulch the entire area with a wood fiber mulch to stabilize soil during vegetative growth and control runoff, 4) plant containerized stock to further stabilize the soil provide vegetative diversity. Hydro seeding will combine the tackifier and small amount of mulch with the seed mix (to mark the area of coverage) during application to the redistributed topsoil. All seed utilized on the site will be certified pure live seed. After the seeding step, the mulch (wood fiber and hay/straw) and tackifier will be applied to the seed bed surface. The plant containerized stock will be planted in the second year of reclamation. Revegetation work will not be done until fall (September-October).

5) Remove pad fill/re-expose and revitalize the left-in-place topsoil (S/T/F areas); After the surface facilities have been demolished and removed from the site, and after the cut slopes have been re-contoured and revegetated, removal of the pad material can begin. Pad fill will be removed in 5'-10' lifts using dozers, and loaders and/or backhoes. The material will be loaded into dump trucks and hauled to the portals. A conveyor belt will be installed to transport this fill material from the surface back into the underground mine works. From the conveyor's underground discharge point, the fill material will be picked up by mine LHD (load/haul/dump) vehicles, and transported to the final underground storage area. Because of the steep dip of the coal seam (13%), the fill material will be relatively easy to transport and dump into the abandoned mine workings.

A specified area of the main entries (and connecting cross-cuts) will be designated as the final repository for the pad fill upon final reclamation. Assuming a 25% swell factor for the reposited fill, approximately 1,950 feet of main entries (measured inby from the portal seals) will be needed to adequately store the fill material.

After all the pad fill has been excavated and transported into the mine workings, the mine portals will be permanently sealed. All seals will be constructed according to MSHA standards. After the seals have been constructed, the remaining length of entries from the seals outby to the portal openings will then be backfilled with a last remnant of pad fill material. After the portals have been sealed and backfilled, the highwall will be reclaimed to approximate original contour as described earlier in item 2.

During the fill removal process the bypass culvert inlet structures will be left in place at the upstream end of the mine site in both the right fork and the left fork. The bypass culvert system will remain intact throughout the fill removal process to keep the undisturbed drainage separated from the ongoing reclamation earthwork underway at the minesite. A 40' wide berm will be left intact at the culvert inlets to continue to serve as the culvert headwall and to continue to divert the undisturbed drainage into the bypass culvert.

Fill will be removed from the pads in 5-10 foot lifts starting from the upper end of the yard and proceeding down canyon. At the intersection of the pre-existing topsoiled slope and the pad fill, the geotextile fabric will be re-located. The pad fill will be carefully removed from on top of the geotextile fabric as the yard fill is being excavated. This will allow reclamation to be done on vertical increments of the hillside that will be easy to access from the adjacent yard level. Removal of fill material adjacent to the slopes will be done very carefully in order not to disturb the in-place soil resources located under the geotextile. Fill removal in this area will be done with small earth-moving equipment (Bobcats, backhoes, etc.) and/or by hand if necessary in order to minimize disturbance of the topsoil. Once the geotextile fabric has been exposed, the fabric will be carefully peeled away from the soil and the condition of the underlying soil materials observed at this time. The soil will be reclaimed and revegetated in 5-10 foot horizontal zones that can be easily accessed and worked by hand from the adjacent pad fill level. After each level has been reclaimed as described below, another lift (5-10 feet of fill) will be removed from the fill. Revegetation work will then continue on the next increment of hillside below the previously reclaimed level. This work will be done in continued successive lifts, involving fill removal, peeling away the geotextile, revitalization of the in-place topsoil, and revegetation of the newly exposed increment. Reclamation of the slopes will take place in vertical increments (lifts) simultaneously with the removal of the fill material in corresponding lifts. As fill lifts are being removed, the adjacent newly exposed hillside will be reclaimed and revegetated. It should be noted that approximate original contour of the filled area will also be re-established as the fill is being removed in lifts as described previously.

Sediment control during pad fill excavation will be met by continued use of the sediment pond located at the downstream end of from the yard area. The main bypass culvert inlets and an adequate amount of fill to maintain the existing headwall will be left intact during this phase of the fill retrieval process.

It is anticipated that after the pad fill is removed in lifts and the geotextile fabric is peeled away in vertical increments, the underlying soil material could be somewhat compacted. To enhance the ability of the soil to absorb moisture, a mixture of PAM (Polyacrylamide) or best technology currently available at the time of reclamation, will be applied to the soil surface. PAM is designed to relieve compaction of the soil and open up channels for air and water penetration. This treatment will be applied in successive 5-10 foot lifts as the fill is removed and the hillside is exposed.

The re-exposed soil structure will most likely be undamaged but lacking in microbes and nutrients. In order to regenerate naturally existing soil organisms and assist in reactivating soil activity, an inoculum will be applied to the soil to reestablish soil bacteria, microhorizia and mycelium. To enhance soil microbial establishment and promote more rapid stabilization of the soil the seed mixture (as listed in Chapter 3) will be hand broadcast over the area and raked into the soil surface. A wood fiber mulch will be applied over the seed bed, then the surface will be sprayed with a bonded fiber matrix tackifier. This type of tackifier has appeared to have a much greater ability than regular tackifier to hold and stabilize the soil surface. The bonded fiber matrix tackifier will

be applied at a rate of 3,500 pounds per acre (or manufacturer's recommended application if greater).

By removing the fill in 5-10 foot lifts and simultaneously reclaiming the slopes in corresponding lifts, the pad area can then serve as convenient operating platform for the machinery and supplies used during the reclamation effort. In this manner heavy machinery will not be required to maneuver on the slopes. All reclamation work performed directly on the slopes will be done with hand labor and tools. The reclamation process will be supported by heavy equipment staged on the adjacent pad level.

After approximate original contour (AOC) is achieved, the surface will be prepared according to the R-M-V (roughen, mulch, revegetate) method. Pocking will be the primary method used to roughen the surface. Pocking consists of imprinting the surface with a pattern of depressions measuring approximately 18" x 24" x 8" deep. The purpose of these pocks is to capture and retain water (moisture), and provide a cradle for seedlings and other plant materials.

6) Re-expose the original rock outcrop/rubbleland surface and revegetate; Topsoil will not be applied to the re-exposed rock outcrop/rubbleland slopes which, by definition, are naturally devoid of topsoil, However, as the pad fill is being removed in lifts an 18" layer of this fill material will be left in place on the rock outcrop/rubbleland slopes to help re-establish vegetation. Tests have shown that this fill material is, in and of itself, a suitable growth medium (i.e., topsoil material). This material is chemically and physically the same as the native material existing naturally in the minesite area. In fact, in its natural condition the fill material supports the exact vegetation types and species that are found at the minesite area. The fill material is composed of weathered remnants of the Black Hawk Formation from the adjacent Book Cliffs. By leaving a layer of this fill material in place on the rock outcrop/rubbleland areas these slopes will have a growth medium which is as good as or better than the original rock outcrop/rubbleland in supporting reclamation revegetation. This residual fill material will then be processed as any other topsoil material in terms of revegetation. Prior to revegetation the area will be roughened and pitted with a backhoe bucket.

After approximate original contour (AOC) is achieved, the surface will be prepared according to the R-M-V (roughen, mulch, revegetate) method. Pocking will be the primary method used to roughen the surface. Pocking consists of imprinting the surface with a pattern of depressions measuring approximately 18" x 24" x 8" deep. The purpose of these pocks is to capture and retain water (moisture), and provide a cradle for seedlings and other plant materials.

Revegetation procedures for the rock/rubbleland slopes involves a four step program: 1) application of fertilizer (if laboratory testing indicates a need), 2) hydroseed, 3) hydro mulch the entire area with a wood fiber mulch to stabilize soil during vegetative growth and control runoff, 4) plant containerized stock to further stabilize the soil and provide vegetative diversity. Hydro seeding will combine the tackifier and small amount of mulch with the seed mix (to mark the area of

coverage) during application to the residual topsoil material. All seed utilized on the site will be certified pure live seed. After the seeding step, the mulch (wood fiber and hay/straw) and tackifier will be applied to the seed bed surface. The plant containerized stock will be planted in the second year of reclamation. Revegetation work will not be done until fall (September-October).

Andalex has committed to adding nutrients as determined by laboratory analysis conducted on samples taken before and during final reclamation. The method used to ensure adequate and representative samples from different locations and depths within the borrow site include: taking two soil samples per stockpile and collecting samples with a soil auger at two foot increments. Samples of the undisturbed soil adjacent to the regraded site will also be taken for a baseline chemical reference. Fertilizer will be added to the redistributed topsoil, prior to seeding, if needed is indicated by laboratory results. The fertilizer will be spread on the redistributed topsoil and either disked or hand-raked into the soil (depending on the steepness of the slope).

In order for the remnant layer of fill material to adequate serve as a suitable topsoil material (growth medium) during final reclamation it is imperative that it not become contaminated during the operational life of the mine. This consideration applies equally as well to the left-in-place topsoil. Of primary concern as contaminant sources are salts and petroleum products. Salts are typically used in winter time for de-icing the roadways. Petroleum products (oils, grease, diesel fuel, etc.) are used extensively as part of the day-to-day mine operations.

Salts are not expected to be a problem for the following reasons: a) Because of its geographic location in the drier Book Cliffs, its relatively low elevation (7000'), and its southern exposure orientation, snow fall at the minesite is not expected to be heavy, nor long-lasting. Therefore, salt usage is expected to be minimal; b) The overall gradient of the minesite is a relatively steep 6.4 %. Therefore any salt accumulation along the roadways should be quickly and harmlessly washed away to the sediment pond, and; c) In the event that any salts happen to remain on the surface they are not likely to migrate downward into the fill or the left-in-place soil. Because the evapo-transpiration rate substantially exceeds the precipitation rate in this area, salts would more likely gravitate upward to the surface rather than downward from the surface.

Contamination from petroleum products is not expected to present a problem to the fill material nor the left-in-place topsoil. All oil and grease products will be stored on site in sealed steel containers within a protected weather-tight enclosure. Nearly all of these oil and grease cans will be taken underground before they are opened and used. Diesel fuel will be stored on the surface in substantially constructed steel tanks, and each tank will be located within a concrete/steel enclosure capable of holding the entire content of the tank in the event of rupture. All petroleum products will be delivered, stored and transferred in accordance with an EPA approved Spill Prevention Control and Counter-measure Plan (SPCC as required by Clean Water Act).

7) Remove the bypass culvert/re-expose the original stream channel; As pad fill material is removed in successive vertical lifts and the re-exposed sideslopes are reclaimed, approximate original contour will be re-established. Once the fill has been removed to the bottom of the canyon the bypass culvert will be encountered and exposed. In order to reclaim the channel the culvert will have to be removed. Before culvert removal begins, a minimum of four silt fences will be installed in the natural drainage below the minesite. Removal of the culvert will begin at the up-canyon ends of both the right fork and left fork. The culvert inlets and remnant headwalls will first be removed. At this stage of reclamation the sediment ponds will still be in place at the down canyon end of the reclamation site, and will still be the primary source of sediment control from the site. As the culvert is removed (starting at the upstream end) the geotextile located immediately under the culvert will be exposed. The geotextile will be carefully peeled away, re-exposing the original channel in the process. Many of the larger boulders located adjacent to the channel way (which were originally in the channel but had been relocated out of the way during construction) will now be replaced back into the restored channel.

Within the right fork, most of the stream channel is flanked by Strych soil (C/T/F areas). In some areas the Strych horizon actually forms the banks of the stream channel. This soil resource was protected in place by the geotextile laid down at the time of construction. Once the culvert is removed from this area and the geotextile peeled off, the soil material along the channel banks will be re-exposed.

It is anticipated that after the culvert is removed and the geotextile fabric is peeled away, the underlying soil material along the stream banks will be somewhat compacted. To enhance the ability of the soil to absorb moisture, a mixture of PAM (Polyacrylamide) or best technology currently available at the time of reclamation, will be applied to the soil surface. PAM is designed to relieve compaction of the soil and open up channels for air and water penetration.

As the channel is being restored, silt traps will be constructed in the channel bottom. These traps will consist of depressions measuring about 2-3 feet deep which will be dug into the bottom of the channel. These silt traps will be spaced about 200' apart and, where possible, will be located in areas of naturally occurring grade breaks. The purpose of these silt traps is to collect silt minor quantities which may originate from the adjacent reclaimed side slopes prior to the time that vegetation becomes established.

The re-exposed soil structure will most likely be undamaged by lacking in microbes and nutrients. In order to regenerate naturally existing soil organisms and assist in reactivating soil activity, an inoculum will be applied to the soil to reestablish oil, bacteria, microhorizia and mycelium. To enhance soil microbial establishment and promote more rapid stabilization of the soil, the seed mixture (as listed in Chapter 3) will be hand broadcast over the area and raked into the soil surface. A wood fiber mulch will be applied over the seed bed, then the surface will be sprayed with a bonded fiber matrix tackifier. This type of tackifier has appeared to have a much greater ability

than regular tackifier to hold and stabilize the soil surface. The bonded fiber matrix tackifier will be applied at a rate of 3,500 pounds per acre (or manufacturer's recommended application of greater).

It should be noted that even in non-topsoil areas (i.e., rock outcrop/rubbleland (G/R/F areas)) the channel and channel banks will be revegetated. Within the rock/rubble areas, a layer of fill material will be left behind as a suitable topsoil material (growth media) as described earlier. Therefore, in the channel areas of the rock outcrop/rubbleland, revegetation measures will be identical as for the slope areas.

Revegetation procedures for the rock/rubble channel involves a four step program: 1) application of fertilizer (if laboratory testing indicates a need), 2) hydroseed, 3) hydro mulch the entire area with at wood fiber mulch to stabilize soil during vegetative growth and control runoff, 4) plant containerized stock to further stabilize the soil to provide vegetative diversity. Hydro seeding will combine the tackifier and small amount of mulch with the seed mix (to mark the area of coverage) during application to the redistributed topsoil. All seed utilized on the site will be certified pure live seed. After the seeding step, the mulch (wood fiber and hay/straw) and tackifier will be applied to the seed bed surface. The plant containerized stock will be planted in the second year of reclamation. Revegetation work will not be done until fall(September-October).

The channel restoration process (ie, remove culvert, peel away geotextile, replace boulders, revegetate channel) will continue to progress down-stream until the sediment pond area at the lower end of the minesite has been reached. Then, one by one, the pond impoundments will be taken out. Culvert removal will continue until the entire culvert has been removed. In addition to re-establishing the approximate original contour of the channel, the original channel geomorphology will have been replicated in the following ways:

a) The original channel sinuosity and gradient will have been preserved and replicated.

b) The profile, configuration and the composition of the channel and the adjacent channel banks will have been preserved and replicated.

c) The boulder-stream nature of the original channel will have been restored.

8) Summary; By the time the last section of culvert is removed and the last segment of channel has been restored, the primary goals of reclamation for this site will have been achieved, namely:

a) Re-establishment of approximate original contour

b) Elimination of all highwalls

c) Re-establishment of the original stream channel morphology

d) Topsoil replacement and/or revitalization along with re-seeding in anticipation of successful future revegetation, and

e) Implementation of an adequate sedimentation and erosion control plan to protect the newly reclaimed site until revegetation has been successfully re-established.

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WEST RIDGE MINE
PROPOSED EXPERIMENTAL PRACTICE
Technical Analysis

General Site Description

WEST RIDGE Resources, Inc. (WRI) is proposing a new mine site facility, the West Ridge Mine, in C Canyon approximately 6 mines north of East Carbon City, Utah. The West Ridge minesite surface facilities will be located in C-Canyon where the Lower Sunnyside coal seam outcrops to the surface. The elevation of the minesite ranges from 6,860' at the west end to 7,140' at the upper (east) end of the mine yard. Because of the narrowness of the canyon in this area, surface facilities will be confined to a narrow strip along the bottom of the canyon. Suitable surface area for the minesite will be created by constructing a series of earthen pads within the canyon bottom. This will be accomplished by hauling in fill material and by leveling out the area in the bottom of the canyon drainage. The entire mine site area would be less than 29 acres.

The proposed minesite is located in an area where the main canyon branches into two forks and resembles the letter Y. For simplicity, the minesite can be delineated into four distinct areas: the area located within the left fork (left fork); the area located within the right fork (right fork); the area located within the main canyon south of the forks (main canyon); and the area where the main canyon and the two forks converge (confluence).

Construction of the mine site would involve salvage and protection of topsoil resources prior to construction of the mine pads and site facilities. At the C-Canyon minesite most of the topsoil exists in the confluence area and in the right fork. The confluence area contains pods of Brycan, Strych and Midfork soils. Within the right fork Strych is located along the canyon bottom near the flanks of the stream channel. Midfork also exists along the more densely vegetated south slope (i.e., north facing slope) of the right fork. In these areas topsoil depths vary from 2" to 24" and average about 12". The remainder of the minesite is predominantly rock outcrop/rubbleland with limited topsoil resources. Small isolated patches of Travessilla soil occurs within this rock outcrop/rubbleland.

Description of the Proposed Experimental Practice

Approximately 2.7 acres of the site would have topsoil salvaged and stockpiled with traditional methodology. However, on a portion of the mine site adjacent to an incised drainage channel WRI is proposing to use an experimental practice to protect the topsoil resources (Strych and Midfork soils) in place with a geotextile fabric. This experimental practice would be used on approximately 4.75 acres of the 29 acre proposed disturbed area.

Rather than removing the topsoil from certain areas of the proposed mine yard area, (specifically, areas located along the channel bottom and south slope of the right fork which will be filled over during minesite construction) WRI proposes to protect the soil resource in-place. This will be accomplished by removing large boulders, clearing vegetation while leaving roots in-place, covering the soil surface with a geotextile fabric,

and then placing the necessary depths of fill material over the fabric. The existing stream channel and bank morphology and original ground surface configuration will also be preserved with the layer of geotextile fabric. The fill material which will be placed on top of the geotextile will be hauled in by trucks from an off-site source. The fill will be built up in compacted lifts until the required yard elevation has been reached. The fill itself is a suitable substitute topsoil medium. It does not contain any toxic or unsuitable material and meets the soil suitability recommended by the DOGM guidelines.

At the time of reclamation, the fill material will be removed down to the geotextile layer. The geotextile will then be removed, exposing the original, intact soil surface. To enhance the ability of the soil to absorb moisture, the surface of the re-exposed soil will be gouged and hay worked into the soil. The hay will be applied at a rate of 2,000 pounds per acre. Gouging will serve to control erosion through water retention and allow for air and water penetration into the soil horizon thus promoting vegetation establishment and growth. Gouging should allow rain, snowmelt and runoff to infiltrate the soil to provide aeration and moisture at depth. The winter freeze/thaw cycles will also help to reduce soil compaction. This treatment will be applied as the fill is removed and the hillside is exposed. To enhance soil microbial establishment and promote more rapid stabilization of the soil, the seed mixture will be hand broadcast over the area and raked into the soil surface. A straw mulch will be applied over the seed bed at a rate of 2,000 pounds per acre, then the surface will be sprayed with mulch and tackifier to hold the straw in place. The mulch will be applied at a rate of 500 pounds per acre.

Another component of the experimental practice is the use of marker strips within the rock rubbleland areas. The rock rubbleland areas are defined as "areas of stones and boulders that are essentially free of vegetation and are so closely spaced that there is little soil between the rocks". However, in the rubbleland there are scattered, limited topsoil resources. Prior to placing any fill material in rock rubbleland areas, brightly colored marker strips will be laid on top of the natural undisturbed surface on approximately 12 of the 29 acres. By placing the marker strips on the top of the native earth surface before the fill material is laid down, the boundary between the pre-existing and fill materials will be effectively delineated. Later, during final reclamation, equipment operators will remove the fill material to re-establish approximate original contour. When the operators encounter the marker strips they will know they have reached the original pre-existing surface. In this manner the risk of sub-excavating into the pre-existing surface will be greatly reduced.

To evaluate the effects of the geotextile and fill over the existing in-place topsoil material, a test plot area will be established at the upper end of the mine yard in the right fork near the topsoil stockpile. The test plot set up and reclamation will actually mirror the procedures to be conducted on the Strych and Midfork soils in the mine yard during reclamation. Topsoil salvaged from the stripped half of the test plot area will be stockpiled on the geotextiled half of the test plot area. A soil depth of about one foot will be salvaged from both the Strych and Midfork soil types. Then, the topsoil material stripped from the Strych and Midfork test plot areas will be placed on the geotextiled

area in two separate stockpiles based on soil type. Although topsoil is not being stripped from the Strych area in the mine yard (it is being covered by geotextile to preserve the topsoil in place) the test plot will allow an evaluation of the conventional technique of removing and stockpiling topsoil prior to final reclamation.

Five years after the experimental practice test plot area is established, the test plot site will undergo restoration to original conditions to simulate reclamation of the minesite. The eastern half of the reclamation test plots will represent salvaging, stockpiling and replacement of the topsoil. The western half of the test plots will be created by removing the Strych and Midfork experimental practice test plot stockpiles. Once the stockpiles are removed, the bypass culvert will be removed and the geotextile beneath the stockpiles will be taken up re-exposing the original soil surface. This will create the geotextile-protected test plots which represent in-place topsoil storage. The surface will be gouged to eliminate soil compaction, increase water infiltration and reduce erosion. As the four test plots are being constructed, one ton of weed free hay will be worked into the top 12-18".

After the surface treatments have been applied, the plots will be seeded with the final reclamation seed mix. Straw mulch will be applied over the seed bed of the test plot at a rate of 2,000 pounds per acre. The straw surface will then be sprayed with a mulch and tackifier. A portion of the test plot area could be treated/inoculated with a commercial treatment designed for revitalizing soil in order to evaluate whether treatment of the soil promotes faster growth or more diverse vegetation. Although this is not currently being proposed in the final reclamation plan, it could be used to assist vegetation establishment in the geotextile area at the time of final reclamation. Vegetation monitoring will compare the results of plant growth on the test plot site with the growth on a similar size test area located on the nearby topsoil stockpile. Both test sites will be monitored for five years or until a determination of success has been made. The two test plot areas will be compared with each other as well as the reference area for the Douglas Fir/Maple vegetation type. WRI will consult closely with the Division regarding the results of the test plot study. Should the results show a need to revise the reclamation plan, WRI will work with the Division to amend the plan and incorporate the changes needed to ensure reclamation of the mine yard area will be successful.

As an added element of assurance for the success of reclamation at the West Ridge minesite, WRI has preserved, under long-term lease, a separate source of high quality topsoil which can be used to reclaim the minesite if needed. This substitute material is located nearby. The sole purpose of this topsoil borrow site is to be used for final reclamation on an as needed basis in the unlikely event that the left-in-place topsoil at the minesite cannot be sufficiently revitalized and re-utilized at the time of final reclamation.

Appendix 2-6 of the WRI permit application contains a complete description of the proposed West Ridge Mine experimental practice for in-place topsoil protection. Appendix 5-5 contains the West Ridge Mine Construction/Reclamation Plan, which further discusses implementation of the experimental practice.

Performance Standard For Which the Variance Is Requested

WRI's proposed experimental practice requests variance from Utah performance standard R645-301-251. This performance standard requires that all topsoil, subsoil and topsoil substitutes or supplements will be removed, maintained and redistributed according to the plan given under R645-301-230 and R645-301-240. Under R645-301-230, regulation R645-301-232.100 requires that all topsoil be removed as a separate layer from the area to be disturbed, and segregated. State regulation R645-301-234.100 requires that materials removed under R645-301-232.100 be segregated and stockpiled when it is impractical to redistribute such materials promptly on regraded areas. Under R645-301-240, R645-301-242.100 requires redistribution of salvaged and stockpiled topsoil. The counterpart Federal regulations are 30 CFR 816.22(a), (c) and (d).

Technical Analysis

The topsoil handling regulations are designed to protect and preserve the existing, available topsoil resource that will be affected by mining operations. The proposed experimental practice to leave in-place topsoil located along the channel bottom and south slope of the right fork is potentially more, or at least as environmentally protective during and after mining, than would be possible under the topsoil handling performance standards. The following are significant elements for environmental protection of the topsoil resource and the effect of the experimental practice versus standard operating procedures.

Topsoil quantity

Site conditions were observed September 28, 1998. Both the channel bottom and south slope can be characterized as steeply sloping, boulder strewn and covered by a mature forest. Efforts to salvage topsoil in these areas would require removal of the boulders and vegetation prior to any topsoil salvage. This effort, and in particular the grubbing of vegetation on the steep south slope prior to topsoil salvage, would result in the permanent loss of a portion of the in-place topsoil. This loss will not occur with in-place storage, thereby maximizing the amount of topsoil available for revegetation following mining. Further, the in-place topsoil will not be subject to transportation handling losses common in all topsoil salvage operations.

Topsoil contamination

The in-place topsoil will be protected from contamination with placement of the geotextile fabric over the topsoil and use of non-toxic, non-acid forming fill material in constructing the mine yard. This level of protection is equivalent to placement of the topsoil in a topsoil stockpile. Both the stockpiled and in-place topsoil would undergo a lose of the microbial activity, although the upper two feet of the stockpile would remain active. However, because of the small size of the mine site, lose of microbial activity in topsoil materials at the mine site should be temporary. Proximity to undisturbed areas will result in rapid invasion of native soil microbes.

Topsoil compaction

Both the in-place and stockpiled topsoil would be subject to compaction. Placement of the fill material will compact the in-place topsoil. The process of stockpiling and redistribution of salvaged topsoil will compact the salvaged topsoil. While the levels of compaction each material will undergo is unclear, both in-place and stockpiled topsoil will suffer a loss of existing soil structure. In either case the reclamation plan calls for practices, such as roughening or pitting and incorporation of mulch prior to seeding. This will serve to reduce compaction and increase infiltration in both in-place and respread topsoil.

As discussed above the proposed experimental practice results in at least equivalent levels of environmental protection. In addition, there are other benefits to the proposed practices that should facilitate reclamation success. Because of the proposal to leave topsoil resources along the existing stream channel in-place, the level of disturbance to the channel geometry is minimized. The changes to the channel will be those necessary for installation of the bypass culvert, which will follow the original channel course. These include movement of the large boulders and removal of trees and shrubs. In the areas of in place topsoil protection the geotextile will be laid down prior to any bedding material or culvert is placed. This will ensure that when the fill and geotextile are removed the majority of the premine channel geomorphology and bedrock control will be reestablished resulting in a far more geologically and hydrologically stable reclaimed channel than if the channel had been drastically disturbed and required complete reconstruction following mining.

The use of marker strips to denote the premine surface within the rock rubbleland areas is another potential benefit of the proposed experimental practice. Although it will be impossible to remove all fill material from these slopes this practice will facilitate restoration of approximate original contour and slope stability for these areas. It will also aid in revegetation efforts by exposing some the isolated patches of Travessilla soil that existed in the rock rubbleland, but could not be salvaged because of location and size.

WRI has proposed a set of well conceived test plots to analyze the effects of the proposed experimental practice. The proposed test plots, which will be created five years after the start of mining, will allow WRI to evaluate the effectiveness of proposed in-place topsoil protection compared to topsoil removal, stockpiling and replacement. Monitoring of the test plots will continue for a minimum of five years (cover, production and shrub density will be evaluated for 10 years). Results of the test plots will be used by WRI, if necessary, to modify the proposed treatment of in-place topsoil prior to final revegetation activities following the completion of mining operations.

Finally, WRI has ensured that, regardless of the outcome of the experimental practice, soil resources are available for reclamation of the site. This will assure revegetation success following completion of mining.

The proposed practice represents a potential advance in mining and reclamation

technology because, if successful, it would identify an alternative to the standard requirements at R645-301-251 and 30 CFR 816.22 for topsoil salvage, storage and redistribution in environments similar to that encountered at the West Ridge Mine site.

The proposed experimental practice does not reduce the protection afforded public health and safety below that provided by the performance standards. The topsoil resource is still protected and no hazards to the public are created by in-place topsoil storage.

The practice is not larger than necessary. The proposed practice is constrained by the location and layout of the minesite. Not all disturbed areas will be affected by the proposed practice and will be subject to standard topsoil salvage, storage and redistribution requirements. This experimental practice is not being proposed at other permitted underground coal operations in Utah or the Western States.

Utah DOGM Review

The State has completed a technical analysis of WRI's proposed experimental practice. The analysis discusses the proposed experimental practice and test plots and evaluates the impacts of the proposed practice, including compaction, microbial activity, contamination and channel geomorphology. The State concludes that it considers it highly unlikely the experimental practice will fail and that the borrow area will be needed. DOGM states that the proposed reclamation plan should result in vegetative cover that meets or exceeds the performance standards.

The Utah DOGM has made the findings required under R645-302-214 (counterparts to 30 CFR 785.13(d)).

Recommendation

Based on my review the proposed experimental practice meets the requirements of 30 CFR 785.13. In accordance with 30 CFR 740.4(b)(2) OSM should approve the proposed experimental practice on Federal lands included in the proposed permit area. In accordance with 30 CFR 785.13(d) OSM should concur with the Utah DOGM findings to approve the proposed experimental practice.

Robert Postle, Ecologist
Technical Project Officer

3/9/99
Date

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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March 9, 1999

James Fulton, Chief
Denver Field Division
Office of Surface Mining
1999 Broadway, Suite 3320
Denver, Colorado 80202

Re: Revised Findings and Analysis on Experimental Practice, West Ridge Resources, Inc.
Proposed West Ridge Mine, PRO/007/041, File #2, Carbon County, Utah

Dear Mr. Fulton:

As a result of discussions with Bob Postal and Dennis Winterringer of your staff, some changes were made to the experimental practice section of the West Ridge Mine Permit Application Package (PAP). These changes have now been incorporated into the application and the Division has revised our analysis to reflect the changes. In accordance with our regulations at R645-302-210 and OSM Directive Reg-7, we are forwarding a copy of our revised findings to your office and again request your concurrence on this proposal. We are also including a copy of the changes to the application for insertion to OSM's copy of the PAP.

We believe the applicant has provided adequate plans for protecting topsoil resources which will accomplish the objectives of SMCRA and will result in better reclamation than would occur using conventional salvage and replacement techniques. Your expeditious review and concurrence on the experimental practice is greatly appreciated.

If you have any questions or need more information please contact me at (801) 538-5325 or Robert Davidson at (801) 538-5264.

Sincerely,

Daron R. Haddock

Daron R. Haddock
Permit Supervisor

tam
Enclosures: ta & revised plans
cc: Daron Haddock
Robert Davidson
Jean Semborski (West Ridge)
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REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING

EXPERIMENTAL PRACTICES

Regulatory Reference: 30 CFR Sec. 785.13; R645-302-210, -302-211, -302-212, -302-213, -302-214, -302-215, -302-216, -302-217, -302-218.

Analysis:

Chapter 2, Soils, incorporates traditional methods of salvaging/stockpiling and an Experimental Practice method for protecting soils in-place. The **Experimental Practice** is unique by taking a **Reclamation Approach** for topsoil protection.

Operations - Experimental Practices

Appendix 2-6, West Ridge Mine Experimental Practice In-Place Topsoil Protection, details protecting topsoil resources in-place for (1) buried topsoil areas, and (2) buried RO/RL (rock outcrop/rubbleland) Travessilla Complex soil area. These two combined areas account for 16.75 acres of the total 29 acres of disturbed area.

(1) Buried Topsoil Areas

West Ridge Resources is proposing a topsoil protection plan which incorporates **Experimental Practices (R645-302-200) for protecting in-place soil with a layer of geotextile fabric.** The geotextile fabric provides a protective barrier between the existing soils and the imported fill materials used to construct the mine pads. By utilizing this procedure, soils are not only preserved in-place, but the existing stream channel geomorphology and original ground surface configuration are preserved likewise. Approximately 4.75 acres of the proposed 29-acre disturbed area will be affected using the geotextile fabric.

(2) Buried RO/RL Travessilla Complex Areas

The buried RO/RL Travessilla Complex mapping unit will be included in the Experimental Practices. As stated in the Order-III soil survey, the RO/RL Travessilla Complex unit contains 35% soils by volume (25% Travessilla plus 10% other soils) that support a significant vegetation community. Successful reclamation requires the same soil and rock parameters that currently exist to establish revegetation success standards. By preserving these soils in-place underneath the pad fills, successful revegetation should be achieved. Placing the RO/RL Travessilla Complex mapping unit under Experimental Practices will not require the use of geotextile fabric. As stated in the plan, the RO/RL areas will not be covered with geotextile, but instead, fill will be placed directly over the existing ground surface which will be marked with brightly colored marker flagging strips placed on 8-foot centers for the purpose of identifying the original surface during reclamation and excavation of the pad fills. Marker strips will be used on approximately 12 of the 29 acres of the disturbed area.

Construction Sequence

Map 5-11, Construction Sequence, illustrates the different stages of construction for the West Ridge Mine site. Steps 2 and 3 illustrate the Experimental Practice steps for installing geotextile fabric and marker strips. Construction sequence steps are outlined as follows:

- Steps 1 through 4 are preparatory steps prior to topsoil salvage. Step 1 is removing vegetation; Step 2 is installing culvert and culvert backfill while placing geotextile in channel bottom and placing marker strips in RO/RL areas; Step 3 is installing geotextile fabric over topsoil fill slopes, and placing marker strips in RO/RL areas; and Step 4 is pulling boulders from the surface of slopes that will be cut. Topsoil salvage occurs in Step 5. After topsoil salvage has occurred from the topsoil area and RO/RL areas, excavation of the side slopes will occur in Step 6. These excavated native materials will be used as pad fill and will be placed over the backfilled culvert adjacent to the cut slopes. Step 7 shows completion of the pad level by hauling in imported fill from offsite, commercial gravel borrow areas. A final cap layer of road base material is placed over the imported fill surface as shown in Step 8.

Reclamation - Experimental Practices

During fill removal, a 12- to 18-inch deep working layer will be left over the Experimental Practice slopes. Care will be taken not to subexcavate or disturb the geotextile soil surfaces. Equal care will be taken to protect the "ribbon" surfaces in the RO/RL areas. Fill removal from the slopes will be done carefully without disturbing the in-place soils located under the geotextile and marker strips. Fill removal will be done by small earth moving equipment and/or by hand labor if necessary to minimize disturbance of the topsoil. After the pad fill has been removed, the backfilled culvert will serve as the primary access way for machinery and materials associated with the remaining reclamation efforts.

Once the geotextile fabric has been exposed, the fabric will be carefully peeled away from the soil and the condition of the underlying soil materials observed at this time. The soil will be re-exposed in 5-10 foot horizontal zones that can be easily accessed and worked by hand from the adjacent pad fill level.

In RO/RL fill areas, fill will be removed down to the original, undisturbed surface as delineated by the marker strips. Because of the roughness of the ground surface, pad fill be removed to the extent possible.

To relieve soil compaction and increase the ability of the soil to absorb moisture, the re-exposed soil surface will be gouged and hay worked into the soil at the rate of 2,000 pounds per acre. Gouging depressions will approximately measure 24" X 36" X 18" deep and will create a pattern of depressions that help control erosion through water retention, minimize siltation, and allow for air and water penetration into the soil horizon.

Reclamation Sequence

Map 5-12, Reclamation Sequence, illustrates the different stages of reclamation for the West Ridge Mine site. Steps 3 through 8 illustrate all Experimental Practice steps involved with reclamation for removing fill, restoring buried soils and reclaiming the original soil surface. Reclamation sequence steps are outlined as follows:

- Steps 1 through 5 show reclamation steps prior removing geotextile and reclaiming the original soil surface. Step 1 is removing cap layer and surface structures; Step 2 is removing excess imported pad fills; Step 3 is removing remaining native pad fill and backfilling cutslopes; Step 4 is replacing topsoil on re-established slopes; and Step 5 is relocating boulders on re-established slopes and preparing soiled surface for revegetation. Steps 6 through 7 show removal of geotextile, soil restoration steps and revegetation; Step 8 shows final culvert removal and restoration of Channel, which includes geotextile removal and re-exposure of the original soil surfaces while maintaining the geomorphology of the stream channel.

Field Trials

In order to evaluate the effects of the geotextile and fill over the existing in-place topsoil resources, a test plot study area will be established in the upper right fork northeast of the topsoil stockpile. The purpose for the test plots is to evaluate the Experimental Practice reclamation plan proposed for the mine yard area.

The test plots will be established in an areas upstream from the topsoil stockpile in the right fork. As in the Experimental Practice, soil will not be salvaged from the west half of the test plot area. First, geotextile will be placed in the west half of the test plot area with the culvert and fill material placed on top of the geotextile in the same sequence and manner as used in the mine yard construction. Next, topsoil will be salvaged from the two different soil types in the east half of the test plot area and placed separately on the fill on the west side of the test plot area. Geotextile will then be placed on the northeast portion of the test plot area where soil was stripped (Strych soil) and the culvert extended through this area. Cut material from the southeast portion of the test plot area from which Midfork topsoil had previously been salvaged will be placed on top of the culvert. Finally, the test plot topsoil stockpiles on the west side of the test plot area and the cut and fill on the east half will be seeded with the interim seed mix.

After the test plot area is constructed, the cut/fill area will remain intact for five years to simulate the operation phase of the mine yard. Following the five year period, reclamation will be performed on the test plot area to actually implement and test the final reclamation plan in comparison to conventional reclamation techniques. Appendix 2-6 contains a complete discussion of the Experimental Practice test plot plan.

The resulting four test plots will be grouped into two categories, the "removed topsoil test plot" and the "in-place topsoil test plot". One portion of the test plot area could be treated/inoculated with a commercially available soil activator designed for revitalizing soil in order to evaluate whether inoculating the topsoil promotes faster or more diverse revegetation. Although this is not currently being proposed in the final reclamation plan, it could be used to assist vegetation establishment in the geotextile area at the time of final reclamation.

After the surface treatments have been applied, the plots will be seeded with the final reclamation seed mix. Canyon sweetvetch will also be seeded on the test plots. Because of the small area to be treated (about 0.31 acre), the seed will be broadcast on the surface and raked in by hand. Straw mulch will be applied over the seed bed of the test plot at a rate of 2,000 pounds per acre. Then the surface will be sprayed with a mulch and tackifier.

The test plot area will be accessed via the extreme edge of the topsoil stockpile and the adjacent cutslope during late summer or early fall. Any compaction or disturbance to the stockpile surface will be ripped and reseeded following completion of the test plot installation and reclamation of this area.

Vegetation monitoring will compare the results of plant growth between the Experimental Practice in-place soils to replaced topsoil. Monitoring will compare re-vegetation response for each soil type (Strych and Midfork) for each of the two soil surfaces (channel bottom and hillside). For example, comparisons will be made between in-place soils and replaced soils for the channel bottom soils consisting mainly of Strych; likewise, comparisons will be made for hillside Midfork soils. The experimental test plot area will also be compared with the reference area for the Douglas Fir/Maple vegetation type. Vegetation will be monitored for five years or until a determination of success has been made for the Experimental Practice. WEST RIDGE Resources will consult closely with the Division regarding the results of the test plot study. Should the results show a need to revise the reclamation plan, WEST RIDGE Resources will work with the Division to amend the plan and incorporate the changes needed to ensure reclamation of the mine yard area will be successful. As a last resort, West Ridge Resources will utilize the soil borrow area for obtaining soils to reclaim the site if the Experimental Practice is determined to be unworkable.

Analysis of the Proposed Experimental Practice

The Utah State soils regulations (R645-301-200) are intended to protect and preserve topsoil resources for the purpose of revegetation, thus providing a stable surface capable of supporting the postmining land use. The proposed Experimental Practice, including operation and reclamation procedures, provides soil resource protection equal to or greater than what would be obtained through traditional methods of salvaging and stockpiling as required in the Utah State soil's regulations. The Division has analyzed the proposed Experimental Practice for preserving topsoil resources in-place with respect and in relation to the State's regulatory obligations, and the applicant has adequately addressed each of these requirements. The following discussion gives an analysis of the proposed Experimental Practice after listing the applicable regulation:

R645-302-214 No application for an experimental practice under R645-302-210 will be approved until the Division first finds in writing and the Office then concurs that:

R645-302-214.100 The experimental practice encourages advances in coal mining and reclamation technology or allows a postmining land use for industrial, commercial, residential, or public use (including recreational facilities) on an experimental basis;

Through the Experimental Practice, the applicant intends to demonstrate that in certain situations, topsoil storage in place provides the same degree of protection for the topsoil materials plus provides a soil bed that promotes faster establishment of vegetative cover and greatly enhances the stability of the reclaimed slopes while providing a very natural looking reclaimed surface. The Division finds that the Experimental Practice encourages advances in coal mining and reclamation technology by providing an opportunity for a demonstration that these goals can be achieved.

The second required finding in this regulation does not apply to the West Ridge proposal.

R645-302-214.200 The experimental practice is potentially more, or at least as, environmentally protective, during and after coal mining and reclamation

operations, as would otherwise be required by standards promulgated under R645-301 and R645-302;

The environmental protection standards normally required under R645-301 that are applicable to the Experimental Practice are:

R645-301-232.100	All topsoil will be removed as a separate layer from the area to be disturbed, and segregated.
R645-301-234.200	Stockpiled materials will:
R645-301-234.220.	Be protected from contaminants and unnecessary compaction that would interfere with revegetation;
R645-301-234.230.	Be protected from wind and water erosion through prompt establishment and maintenance of an effective, quick growing vegetative cover or through other measures approved by the Division; and
R645-301-242	Soil Redistribution
R645-301-243	Soil Nutrients and Amendments. Nutrients and soil amendments will be applied to the initially redistributed material when necessary to establish the vegetative cover.

Under the Experimental Practice, topsoil on a portion of the site will not be salvaged as a separate layer from the area to be disturbed, segregated, and stored for later use. However, it will be protected as required under R645-301-234.200 as follows:

1. **Contamination.** Native soils could be contaminated by imported fill material; however, no imported fill will contact the undisturbed soils. In reclamation, the imported fill will be taken away and the native fill from adjacent slopes will be replaced in the cuts (see Map 5-12). In all cases, there will be a buffer of native fill between the imported fill and the native soils. In order to minimize the impact of any deleterious effects of the imported fill, bright marker flagging will be placed between the native and imported fills to delineate between the two fills during reclamation for the purpose of ensuring complete excavation and removal of the native fills.

   After removing the imported fills, the native fills will be excavated and placed in the cutslopes to achieve approximate original contour. The native fill should not mix with the undisturbed Midfork soils because of the geotextile. There will be some mixing in RO/RL areas, but the native fill is essentially the same material as the RO/RL soil.

   The imported fill may mix with and contaminate some of the native fill; however, this potentially-contaminated material will be the first to be replaced on cutslopes and will be buried the most deeply.

2. **Compaction.** Pad fill material will compact the soil, but in reclamation, the applicant intends to gouge the surface eighteen inches deep and incorporate alfalfa hay. Below eighteen inches, there should be few effects from the fill. This procedure, combined with natural processes (e.g., freeze/thaw), should adequately alleviate compaction and allow vegetation to become established.

3. **Erosion Protection.** Because the soil will be buried under the fill, it will not be vegetated. However, there will obviously be no erosion.

4. **Soil Redistribution.** No topsoil redistribution is necessary since the soils are retained and preserved in-place, thus preserving and re-establishing the original contour surface. In addition to adequately protecting the topsoil for use in reclamation in-place, the Experimental Practice will also preserve the channel geomorphology resulting in decreased erosion and a more stable channel very similar to what currently exists.

5. **Soil Microbial Viability.** The Division considered the question of decreased microbial activity in the soil being stored under the pad. Soil that is buried for several years has been demonstrated to have few, if any, microorganisms when it is uncovered. Many microorganisms are beneficial in plant establishment and growth.

   While soils in the Experimental Practice area may have few live microorganisms when uncovered during reclamation, natural inoculation is likely to occur quickly since the site is surrounded by undisturbed areas. Nearly all of the proposed disturbed area would be less than 200 feet from undisturbed areas with the farthest being about 250 feet away. The Division is aware of a nearby area where cryptobiotic soils have become established naturally on a soil borrow area after only eight years. The applicant will try a soil activation treatment on the test plots, and if the test plots are unsuccessful, a commercial soil inoculant could also be tried.

   Soil sterility is also a problem where soil is salvaged, stored for several years, and respread, so there is little difference between the proposed practice and what would normally be required.

In the event the Experimental Practice fails, West Ridge Resources has secured and permitted a topsoil borrow area for supplying substitute soil materials that are equal to, or more suitable for sustaining vegetation on nonprime farmland than the majority of the existing topsoil in the Experimental Practice area. The exception is the Midfork soil, which is identified as a Mollisol. However, the Midfork soil only occupies a small percentage of the geotextile protected surface.

The Division finds that the Experimental Practice adequately protects topsoil with the added benefit that channel geomorphology will be preserved resulting in decreased erosion and sedimentation. Thus, the Experimental Practice is at least as, and potentially more environmentally protective during and after coal mining and reclamation operations as would otherwise be required by standards promulgated under R645-301 and R645-302.

R645-302-214.300 The coal mining and reclamation operations approved for a particular land use or other purpose are not larger or more numerous than necessary to determine the effectiveness and economic feasibility of the experimental practice;

The Experimental Practice is being proposed on approximately 4.75 acres for the geotextile placement and 12 acres for the marker strips. This includes the (1) geotextile area which lies in and adjacent to the drainage channel in the right fork of C Canyon overlying Strych and Midfork soils and which would be filled in during construction and (2) the rubbleland areas where brightly colored marker strips would be placed on the original surface prior to fill placement. The only part of the Experimental

Practice area where it would be practical to salvage soil is the geotextiled area. The larger 12 acre area is identified as rock rubbleland where numerous rocks and boulders are intermingled with soil materials or where rocks and boulders are so closely spaced that there is little soil. Topsoil removal, storage and replacement would be impractical in this area. Therefore, protecting the soil resources within the rubbleland will preserve these soils in-place which otherwise would have likely been lost.

The entire surface disturbance area is 29 acres. The Experimental Practice area is about 17 acres. The topsoil in the remainder of the disturbed area (~12 acres) will be handled according to the R645-301-200 regulations for salvaging, stockpiling, and redistribution.

The Division finds that the Experimental Practice is being carried out in an area not larger than necessary to determine its effectiveness and economic feasibility.

R645-302-214.400 The experimental practice does not reduce the protection afforded public health and safety below that provided by standards promulgated under R645-301 and R645-302.

The soils regulations to which the Experimental Practice applies do not contain requirements dealing with public health and safety. Therefore this regulation does not apply to the situation.

The proposed Experimental Practice should have essentially no effect on any aspect of the reclamation dealing with public health and safety. If anything, the reclaimed slopes should be more stable after applying the Experimental Practice since they will not have been excavated and replaced.

Findings:

Information provided in the application is considered adequate to meet the requirements of this section. Specifically, in accordance with:

R645-302-214, The Division finds that the Experimental Practice:

1. Promotes advances in coal mining and reclamation technology by providing an opportunity for the applicant to demonstrate that topsoil storage in place provides the same degree of protection for the topsoil materials plus provides a soil bed that promotes faster establishment of vegetative cover and greatly enhances the stability of the reclaimed slopes while providing a very natural looking reclaimed surface.

   The applicant is not proposing a postmining land use for industrial, commercial, residential, or public use (including recreational facilities) on an experimental basis, so the second finding in R645-302-214.400 does not apply.

2. Provides at least the same degree of protection of the topsoil resource as would be given using traditional salvage operations. Other components of reclamation would be enhanced by the proposed practice. Stream channel morphology is preserved which should lead to less erosion and sedimentation. Soil structure and integrity would be easier to reestablish when the site is reclaimed. Rocks, roots, and other materials should still be present at the time of reclamation, and this should lead to greater surface structural diversity and greater plant and animal species diversity.

3. Is being carried out in an area not larger than necessary to determine its effectiveness and economic feasibility. The majority of the area containing topsoil will have the topsoil removed and stockpiled prior to construction of the proposed mine site. The only part of the Experimental Practice area where it would be practical to salvage soil is the geotextiled area. The larger 12 acre area is identified as rock rubbleland where numerous rocks and boulders are intermingled with soil materials or where rocks and boulders are so closely spaced that there is little soil. Topsoil removal, storage and replacement would be impractical in this area. Therefore, protecting the soil resources within the rubbleland will preserve these soils in-place which otherwise would have likely been lost.

4. Because the soil protection regulations from which the applicant is seeking an exemption do not contain provisions for protection of public health and safety, the requirements of R645-302-214.400 do not apply. However, the proposed Experimental Practice will have no negative effect on public health and safety. It should, if anything, increase the stability of the reclaimed slopes thus assisting in providing safe and stable slopes.

R645-302-210, Issuance of this permit will specifically authorize West Ridge Resources, Inc. to conduct an Experimental Practice in conjunction with their approved Coal Mining and Reclamation Operations which allows for the protection of topsoil "IN-PLACE" rather than salvaging soil and stockpiling it for future reclamation. West Ridge Resources, Inc. will follow the plans as outlined in the approved Mining and Reclamation Plan, Chapter 2 and Appendix 2-6 and will be required to evaluate the effectiveness of the Experimental Practice on an annual basis. The Division will conduct annual reviews of the practice to ensure that it fully protects the environment and the public health and safety. In the event that the Experimental Practice is determined to be not as environmentally protective as would otherwise be required by standards promulgated under R645-301 and R645-302, revised reclamation plans which utilize standard reclamation technology will be required.

United States Department of the Interior

OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
Washington, D.C. 20240

Memorandum MAR 3 1999

To: James Fulton, Chief
Denver Field Division

From: Mary Josie Blanchard, Assistant Director
Program Support

Subject: Proposed West Ridge Mine Experimental Practice

We have reviewed the information provided on the proposed experimental practice for in-place topsoil protection at the Andalex Resources Inc., West Ridge Mine. We recommend approval of the experimental practice.

It is our understanding that an Environmental Assessment (EA) is being developed for the experimental practice. Please forward a copy of the EA to Scott Boyce of my staff when it is available. Also, assuming approval, please let Scott know the date of approval and who to contact for information about the experimental practice.